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REPORT ON WATER POLLUTION CONTROL - NEW YORK-NEW JERSEY METROPOLITAN AREA

Public Health Service
New York City, New York

July 1951

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NEW YORK - NEW JERSEY METROPOLITAN AREA

A Cooperative State-Federal Report on Water Pollution Control

NEW YORK
Department of Health
NEW JERSEY
Department of Health
THE INTERSTATE SANITATION COMMISSION

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REPORT ON WATER POLLUTION CONTROL

NEW YORK - NEW JERSEY METROPOLITAN AREA

July 1951

Prepared by:

Federal Security Agency
Public Health Service
Division of Water Pollution Control
North Atlantic Drainage Basins Office

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In cooperation with and on the basis of information supplied by:

The New Jersey State Department of Health
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INTRODUCTION

The Federal Water Pollution Control Act, Public Law 845, passed by the 80th Congress in June of 1948, provides for full recognition of the primary responsibilities and rights of the States in controlling water pollution. It requires the Surgeon General of the Public Health Service to cooperate with other Federal agencies, with State and interstate water pollution control agencies, and with municipalities and industries in the preparation or adoption of comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries thereof, and improving the sanitary condition of surface and underground waters.

In developing these programs, due regard must be given to improvements necessary to conserve the Nation's waters for public water supplies, propagation of fish and aquatic life, recreational purposes, agricultural, industrial and other legitimate uses.

As a first step in carrying out this requirement, the data available as of July 1, 1950, were presented in summary type reports covering the major drainage basins in the United States, the data concerning the New York - New Jersey Metropolitan Area being presented briefly in the summary report on the North Atlantic Drainage Basins.

This report describes the status as of July 1951 of the water pollution control programs in the New York - New Jersey Metropolitan Area, conducted by the New Jersey State Department of Health, the New York State Department of Health Water Pollution Control Board, and the Interstate Sanitation Commission. It sets forth information about the ways the water resources of the area are used, the pollution entering those water resources and the resulting damages, the benefits which may result from pollution prevention and abatement, pollution prevention measures in effect, and those which appear to be needed. Its scope is limited primarily to surface water pollution control, although usage of ground water is mentioned. While it is true that additional information is needed to complete these programs, the objectives have been established and general plans for attaining them have been adopted. These programs are well advanced in New Jersey and the Interstate Sanitation District and are progressing in the New York areas outside of the Interstate Sanitation District. Water uses have been delineated in most areas, classification of the waters in accordance with those uses has been completed, and the required degrees of treatment specified. In addition time schedules for the completion of the needed works have been adopted.

The procedures followed by the respective State and interstate agencies vary considerably because of the different types of laws under which they operate. Programs have been geared to these laws and also to the administrative machinery available in relation to the problems involved. The final objectives, however, are consistent and compatible.

The data on which this report is based have been compiled through and in cooperation with the New Jersey State Department of Health, the New York State Department of Health Water Pollution Control Board, and the Interstate Sanitation Commission. Through these agencies additional data have been obtained from other State officials, municipal officials, and representatives of industry. Federal agencies also have cooperated.

The detailed data and remarks relating to individual sources of pollution appearing in Basic Data Tables 1 and 2 are the determinations of the State and interstate water pollution control agencies and are included to illustrate the status of the programs as of July 1951.

Comprehensive programs for pollution control must necessarily be fluid. They must allow for growth, development, and changing conditions. The programs now in effect in this area appear to fit the current needs. Reappraisal in the course of time will provide for adjustments as the need arises.

A sincere effort has been made by all who contributed to this report to present a fair picture of the complex water pollution problems in the New York - New Jersey Metropolitan Area and to present reasonable conclusions. It is our hope that this report will help in safeguarding the water resources in this area.

ACKNOWLEDGMENTS

The Public Health Service wishes to acknowledge the cooperation and assistance of those agencies and individuals that have contributed to the preparation of this report.

The New Jersey State Department of Health, the New York State Department of Health Water Pollution Control Board, and the Interstate Sanitation Commission have furnished the data from which the various tables were prepared and other data and information contained in the narrative statements. These agencies have, in addition, reviewed the preliminary draft of the report and offered valuable comments and suggested changes. In general, the preliminary draft has been revised so that the report is in agreement with the comments and suggestions of the participating State and interstate agencies.

Federal agencies from which assistance was obtained include the Corps of Engineers, Department of the Army; Community Facilities Service, Housing and Home Finance Agency; Geological Survey and Fish and Wildlife Service, Department of the Interior; Bureau of the Census and Weather Bureau, Department of Commerce; Soil Conservation Service and Forest Service, Department of Agriculture; and the Federal Power Commission.

Finally, there is acknowledged the assistance of other State and Federal agencies and individuals interested in water resources development and conservation that have contributed information through other sources than those listed above.

SUMMARY

Water pollution has been a continuing problem of the New York - New Jersey Metropolitan Area for more than 50 years. Its current magnitude is in proportion to the more than 12,800,000 people now living in a drainage area of only 4700 square miles. In addition to the high population density, over 20% of the industrial establishments of the entire country are located here, many of which use large quantities of water in their industrial processes.

Municipal water consumption amounts to more than 1,300 mgd of which more than 646 mgd are obtained from sources within this drainage region. Industrial water consumption amounts to more than 1800 mgd of which approximately 3 percent is fresh water. Of the 1742 mgd of salt water used by industrial establishments about 74% is used for cooling purposes only.

Practically all the communities of north Jersey have extensive watershed areas, privately or municipally owned, within the drainages of the Raritan, Rahway, Passaic, or Hackensack Rivers. One-third of the New York City water supply is developed in this drainage region on the Croton watershed, supplying approximately 330 mgd, or about 30% of the daily demand. Ground water is the only water source that has been extensively developed for domestic and industrial uses on Long Island. Surface water obtained from mainland sources is being used on Long Island to an increasing extent as withdrawal of ground water has been reduced or discontinued in Brooklyn and Queens.

The salt and brackish waters of the metropolitan area are extensively used for navigation purposes, a use which was instrumental in the growth and development of this area. These same waters have been and will continue to be used intensively for recreational purposes and in some areas for extensive shellfisheries. In addition to the recreational use of the marine waters, particularly along Long Island, the upland waters along the streams of New Jersey and Westchester County are similarly used.

Another widespread use of the waters of this region has been for waste disposal, both municipal and industrial. At present there are reported some 241 major municipal outfalls contributing treated and untreated sewage to the waterways from over 12,100,000 people. Sewage from a served population of about 6,880,000 receives either primary (includes screening) or secondary treatment and the sewage from about 5,287,000 persons receives no treatment. Including the recently completed surveys of the Interstate Sanitation Commission, there have been reported 415 industrial establishments with direct discharges to waterways of this region. Waste treatment facilities are currently in operation at 181 of the 415 industries. The 238 industrial establishments with direct discharges reported in the New York - New Jersey area of the Interstate Sanitation District discharge a volume of about 495 mgd of contaminated waste water of which 92 percent is salt water.

There are currently 121 municipal sewage treatment plants providing adequate treatment, while 78 are unsatisfactory. Work now under construction will provide adequate treatment facilities for 22 sources of municipal pollution, and will serve 2,076,700 people. Work in advanced stages of planning will take care of 70 other sources of pollution.

The pollution abatement needs of some industrial establishments will be provided by several large municipal projects in planning status or under construction, particularly the trunk sewers of the Middlesex County Sewerage Authority and the Bergen County Sewerage Authority, both in New Jersey. The needs and requirements for pollution abatement for the industries discharging to the waters of the Interstate Sanitation District have not as yet been determined. Although its status has vastly improved, oil pollution continues to be a serious problem, principally in the navigable waterways. The summary statistics on pollution for the New York - New Jersey Metropolitan Area are contained in the following table.

The effects of the tremendous volumes of untreated and inadequately treated sewage and industrial wastes on the waterways of this region are manifold. At present industrial and municipal discharges to the Raritan and Hackensack Rivers have markedly restricted water uses on these rivers. The status of the Passaic River, from the falls at Paterson to its mouth, which is under the jurisdiction of the Passaic Valley Sewerage Commission, has not been fully reported. Although this portion of the Passaic River is served by the trunk sewer operated by the Commission, cursory examination indicates that further pollution abatement work is needed.

On Long Island, in the Moriches Bay area, severe pollution conditions have developed due to drainage of wastes from the many duck farms. Under the New York State Water Pollution Control Law, a survey of this area has been made, stream classifications proposed, and hearings held thereon. A similar procedure is underway in the Peconic River - Flanders Bay area.

Pollution along the section of the Hudson River that flows through this region is sufficiently bad in several areas to prevent bathing at established recreational areas. However, with the completion of the program of pollution abatement in the Interstate Sanitation District, the river will be available for more extensive use.

Due to extensive pollution conditions in the immediate New York City area, the bathing waters of this City have to be closely watched by the authorities. However, this near-critical condition will be alleviated upon the completion of the extensive sewage treatment program now underway.

NEW YORK - NEW JERSEY METROPOLITAN AREA

SUMMARY STATISTICS ON POLLUTION .

July 1951

Extracted and condensed from various tables throughout the report.

SOURCES OF POLLUTION

	Municipal	Industrial
Number	241	415
Population Served	12,167,500	

EXISTING WASTE TREATMENT FACILITIES

	Municipal			Industrial		
	Primary* Treatment	Secondary Treatment	No Treatment	Treatment	No Treatment	Undetermined
Number	105	101	35	181	231	3
Population Served	2,722,400	4,157,200	5,287,900			

ADEQUACY OF EXISTING WASTE TREATMENT FACILITIES

	Municipal			Industrial		
	Satisfactory	Unsatisfactory	Undetermined	Satisfactory	Unsatisfactory	Undetermined
In Capacity	121	78	7	46	14	121
In Operation	165	16	25	50	6	125

WASTE TREATMENT NEEDS

	Municipal			Industrial		
	No Project Needed	Project Needed	Undetermined	No Project Needed	Project Needed	Undetermined
Number	120	110	11	46	34	335
Population Served	4,107,600	8,013,200	46,700			

CURRENT STATUS OF ACTION ON TREATMENT NEEDS

	Municipal			Industrial		
	Under Construction	Planning or Plans Approved	Inactive	Under Construction	Planning or Plans Approved	Undetermined or Inactive
Number	15** (22 munic.)	70	18	6	22	6
Population Served	2,076,700	5,343,600	592,900			

---

* Includes minor treatment (screening plants)

** Seven new plants and enlargement of eight existing plants.

In the early growth of the region, the waterways, particularly the tidal estuaries, were used extensively for waste disposal, usually without treatment of any sort. However, at the turn of the century, these waterways were becoming so badly polluted that public pressures brought about necessary steps for correction. Today three agencies have jurisdiction over pollution problems in this drainage area: In New Jersey, the New Jersey State Department of Health; in New York, the New York State Department of Health Water Pollution Control Board; and superimposed on the New York Harbor area and adjacent waterways is the jurisdiction of the Interstate Sanitation Commission, formed by compact among the States of New Jersey, New York and Connecticut.

These agencies have established policies and programs for the abatement of pollution in the streams and waterways of this region. In New Jersey the State Department of Health has decreed that all sewage discharged into surface waters which are used as a source of potable water shall receive secondary treatment plus disinfection, and the minimum treatment for sewage discharged to all other waters shall consist of effective sedimentation, plus disinfection where and when needed. However, nearly all of the sewage effluents discharging into the inland waters, especially the non-tidal inland waters, have secondary treatment and disinfection. In addition it has established specific effluent standards for the Raritan River. It has also endorsed the trunk sewer programs of the Middlesex County Sewerage Authority and the Bergen County Sewerage Authority.

Under the New York State Water Pollution Control Law, detailed investigation must be made, hearings held, and classifications adopted before pollution abatement can be required. Of the streams in this drainage area under the jurisdiction of the New York Water Pollution Control Board, only those streams draining into Moriches Bay and Flanders Bay on Long Island and Sparkill Creek draining into the Hudson River have been surveyed. Stream classification and pollution abatement requirements are expected to be established shortly for the discharges to these waterways. The remaining streams in this area will be classified as a part of the state-wide stream classification program of the New York Water Pollution Control Board which may require 15 years for completion.

The program of pollution abatement in the waters under the jurisdiction of the Interstate Sanitation Commission is one of the largest in the country. At present all municipalities discharging untreated sewage to the waters of the Interstate Sanitation District have been issued orders to abate this pollution. It is anticipated that by 1959 all raw sewage now being discharged to the waters of the Interstate Sanitation District will be treated to meet the effluent and water quality standards of the Commission. An idea of the magnitude of this work can be gained from the sewage treatment program of New York City, the major contributor of sewage to the waters of the District. It is expected that by the spring of 1952 facilities will be treating approximately 65 percent of the more than 1,000 mgd discharged by New York City. The first stage of the program scheduled for completion by 1953 will cost $131,000,000 and when finally completed will cost at current estimates about $300,000,000.

It is conservatively estimated that the total cost of municipal pollution abatement in this area will be about $400,000,000. This will include many industrial discharges which will be diverted to municipal sewer systems. No estimate is available of the cost of pollution abatement of industrial wastes discharged directly to waterways. However, the Interstate Sanitation Commission's Industrial Waste Inventory gives an idea of the order of magnitude of the industrial waste problem.

Public relation programs on abatement of water pollution are carried out by the various agencies. Considerable support is given to this work by the local press, civic groups, and other organizations.

CONCLUSIONS

A review of the data contained in this report indicates the following conclusions:

1. The water pollution control programs of the New Jersey State Department of Health, the New York State Department of Health Water Pollution Control Board, and the Interstate Sanitation Commission are generally well advanced in the New York - New Jersey Metropolitan Area. For most of the area water uses have been delineated, waters have been classified or zoned in accordance therewith, degrees of treatment necessary to enable the realization of these uses have been set forth, and time schedules for the construction of abatement projects have been adopted.

2. The State and interstate programs underway are consistent with currently available resources of these agencies, but there is need for augmentation to allow comprehensive reappraisal of the effects of pollution in order to provide the basis for readjustment of abatement needs consistent with changing conditions.

3. Research, both basic and applied, is needed to aid in solving some of the pollution problems confronting this area.

REPORT ON WATER POLLUTION CONTROL

NEW YORK - NEW JERSEY METROPOLITAN AREA

HISTORICAL BACKGROUND[1] [2]

With the purchase of Manhattan Island from the Indians for about 24 dollars by the first Dutch colonists, there was implanted in this area a community which has grown in only three centuries to comprise a metropolitan area of nearly 5,000 square miles, with a population of more than 12,800,000. About 1 in 13 persons in the United States lives within it.

The choice of a settlement site on Manhattan Island by the early colonies was directed by the excellent harbor that the location afforded. It was accessible from the sea, was easily defended, and lay at the meeting of two rivers. In the early days of the colonies the Manhattan settlement lagged behind Boston and Philadelphia in growth although settled earlier than both those cities. During the revolutionary war New York suffered terribly, large sections of the City were burned, commerce practically stopped, and when the American colors were run up in 1783 only 10,000 remained of the population of 20,000 which had existed before the war. However, her population was back to over 33,000 by 1790. By 1800 New York was the leading American seaport, a position which it has never since relinquished.

Today the Port of New York is one of the largest in the world. It is served by more than 300 motor truck lines and 10 trunk line railroads. There are 771 miles of shore line. Within the City limits are 1,300 piers, wharves, and bulkheads. Around this foci of business, industry, and banking has developed one of the largest and wealthiest metropolitan regions in the world. With it has come the inevitable problems of water pollution on a scale of corresponding magnitude.

PHYSICAL DESCRIPTION

Geography

The drainage area of the New York - New Jersey Metropolitan Area differs from many of the other river drainage systems in that it is not a main stem river with branches, but a principal central waterway and harbor into which smaller streams flow with the whole interlaced by connecting tidal waterways.

The drainage area consists of about 4,700 square miles and includes as its major tributaries and rivers that section of the Hudson River below the northern boundary of Westchester County, the Hackensack, Passaic, Raritan and Rahway Rivers in New Jersey, plus the many coastal streams of

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1/ Duffus, R. L.,: Mastering A Metropolis, Harper Bros., New York, 1930.
2/ New York. American Guide Series, Oxford University Press, 1940.

Long Island draining into Long Island Sound and the Atlantic Ocean. Except for those streams on Long Island and the Westchester shore of Long Island Sound, the waterways of this area all converge on or into tidal waterways which lead to or from the New York Harbor and its upper and lower bays. These very waterways stimulated the extensive development of this area and have provided it not only with excellent facilities for transport of merchandise and other products, but also a system of transport for removal of waste materials.

From the westernmost headwaters of the Passaic River to the easternmost tip of Long Island, the area extends for only 170 miles, and in its longest north-south axis, it extends for only 108 miles.

Topography

In Northern New Jersey and the New York Counties of Rockland and Westchester, the river valleys are narrow, deep, and rocky, giving way to gently rolling meadows and hills with broad river valleys in the southernmost portion of this area. The northern areas are characterized by sharp parallel ridges and rolling uplands with maximum elevations of 800 to 1400 feet. Perhaps the famous example of the former is the Palisades along the New Jersey shore of the Hudson River. These parallel ridges obstruct the natural flow of the streams toward the sea and cause them to flow in a twisting and turning manner before they break through these barriers. Most of Long Island is flat, rolling, and extremaly sandy. Along the south shore of Long Island, there are sandy barrier islands and tidal estuaries providing a system of inland waterways.

A large number of the watercourses, particularly in New Jersey, flow through low and swampy lands in the tidal estuaries. This is characteristic of the mouths of the Raritan, Passaic, and Hackensack Rivers.

Hydrology

The rivers and streams of the New York - New Jersey Metropolitan Area are all comparatively small. The portion of the Hudson River covered in this report from the northern boundary of Westchester County to the Battery at the lower end of Manhattan Island is only about 47 miles in length. The principal rivers and streams lie mostly in the northeastern corner of New Jersey and flow into the tidal waters of New York Harbor. The only stream of significance which does not flow into the harbor area is the Peconic River at the eastern end of Long Island. This stream flows into Flanders Bay. The principal streams, their lengths, and drainage area are noted in the following table.

Principal Streams in the New York - New Jersey Metropolitan Area

Stream	Tributary To	Length (Miles)	Drainage Area (Square Miles)	Tidal Length (Miles)
Hudson River*	Upper N.Y. Bay	47*	550*	47**
Hackensack River	Newark Bay	39	201	18
Passaic River	Newark Bay	83.5	949	14
Saddle River	Passaic River	18	61	0
Rockaway River	Passaic River	40	138	0
Whippany River	Passaic River	15	71	0
Ramapo River	Passaic River	34	161	0
Wanaque River	Passaic River	19	100	0
Rahway River	Arthur Kill	21	84	6.5
Raritan River	Raritan Bay	100	1105	14
North Branch Raritan River	Raritan River	11	192	0
South Branch Raritan River	Raritan River	42	276	0
Millstone River	Raritan River	35	299	0
Lawrence Brook	Raritan River	11	45	0
South River	Raritan River	22	133	5
Peconic River	Flanders Bay	14	50	2

* Only that portion below northern boundary of Westchester County, New York.

** Total tidal length about 153 miles to head of tide at Troy, New York.

Except for the large and comparatively uniform flow of the Hudson River, the other streams of this basin are small. The two largest, the Passaic and Raritan Rivers, have average flows of only 1,459 c.f.s. at Paterson, New Jersey (1897-1950) and 1,144 c.f.s. at Bound Brook, New Jersey (1945-1950), respectively. Their monthly minimum flows have averaged 324 and 227 c.f.s. but minimum flows of no flow (regulated) on July 3-5, 1904, and July 16 and 23, 1905, on the Passaic and 79 c.f.s., December 31, 1948, (regulated) on the Raritan have been recorded.

In general the headwaters of the rivers in New Jersey are extensively developed for potable water supplies whereas along their lower reaches, particularly the tidal sections, there are extensive industrial developments. On the Passaic River, the 40 foot wide and 70 foot drop at Paterson was early used as a source of water power for the textile mills of that city.

In addition to the small rivers and streams of this region the tidal reaches and boundary waters represent a significant portion of the waterways of this drainage area. The following table notes the principal tidal waterways or the areas with shores bordering on bays or the open ocean.

Principal Tidal Waterways and Shorelines of the New York - New Jersey Metropolitan Area

Tidal Waterway or Area Bordering Shoreline	Length of Tidal Waterway (Miles)	Length of Shoreline (Approximate Miles)
Harlem River	8	
East River	16.5	
Upper N.Y. Bay and Narrows	6	
Newark Bay	5	
Kill van Kull	4	
Arthur Kill	11	
Raritan Bay		
Staten Island		14
New Jersey		25
Long Island Sound		
Bronx & Westchester Counties		17
Long Island - North Shore		122
Atlantic Ocean		
Long Island - South Shore		132
Jamaica Bay		29
Great South Bay and Moriches Bay		117
Gardiners and Peconic Bays (Including Flanders Bay)		102

Climate

The New York - New Jersey Metropolitan Area has a considerable range of climatic conditions, the rigor in general increasing with the distance from the Atlantic Ocean. The main climatic control of the area is the Atlantic Ocean but its tempering influence is modified to a considerable extent by the prevailing westerly winds from the continental interior, giving to this region relatively mild winters for the latitude, not excessively warm summers, an abundance of precipitation well distributed throughout the year, and a rather high humidity. The rigors of winter increase toward the north and west. The southern areas are subjected to more torrential rainstorms than the northern and western areas. These result from accumulations of moisture originating from the Atlantic Ocean, which are precipitated before reaching the inland territory. The violence of storms moving up the Atlantic Coast is mitigated slightly by the coastal plain and barrier islands. In a similar way, a measure of protection from continental storms moving eastward from the interior is afforded by the Appalachian Mountains.

Most of the rainfall from June to September comes from thunderstorms. Hence, precipitation during the warmer half of the year is usually of brief duration and relatively intense. The annual precipitation increases from approximately 40 inches in southwestern Long Island, in a gradual rise from coastal to inland areas, up to 47-48 inches in Westchester County, New York and the westernmost counties of the drainage area in New Jersey. Snow represents roughly 8 percent of the total annual precipitation. Relative humidity averages about 66 percent throughout the year in New York City indicating a relatively humid climate. There may be occasions in the summer when conjunctions of excessive urban heat and oceanic moisture occur that result in unusual humidity values.

All parts of this drainage area experience a wide annual range of temperature in spite of the stabilizing influence of the Atlantic Ocean. In New York City, the variation in mean monthly temperature is from 31° in February to 74° in July; with the extreme range from a mean monthly minimum of 24° in February to 82° in July. Temperatures above 100° have rarely been recorded and records of below zero are few in number in New York City. The change of seasons progresses gradually, thus affording unusually favorable conditions in the spring for the starting of the crop season, with only rare cases on record of cold periods damaging early vegetation. A growing season of 175 to 190 days is typical of most locations in this area.

ECONOMIC DEVELOPMENT

The political and economic boundaries of this area can best be defined by those counties that are entirely within, and those that have at least 50 percent of their area inside the drainage region. The drainage boundary cuts across several counties in New Jersey and New York, and follows closely the state boundary of Connecticut. The following table notes the counties completely in the region, those with more than 50 percent of their area in the region, and those with less than 50 percent in the region. In the following discussion of the economy of the area, only those counties having at least 50 percent of their area in the region are considered.

Political Boundaries of New York - New Jersey Metropolitan Area

State	Counties Entirely In Drainage Area	Counties With More Than 50% of Area in Basin	Counties with Less Than 50% of Area in Basin
New Jersey -	Middlesex Somerset Union Essex Hudson Bergen Passaic	Morris Hunterdon	Monmouth Mercer Sussex
New York -	Bronx New York Kings Queens Richmond Nassau Suffolk	Rockland Westchester Putnam	Orange Dutchess
Connecticut -			Fairfield

In an area of 4,594 square miles, as defined by the counties listed in Appendix A, there now live 12,893,900 people. (Preliminary figures 1950 Census). In the past decade this area has had an increase in population of more than 1,179,000. This tremendous population with an overall density of more than 2800 per square mile, is by no means uniformly distributed nor have the changes in population in the last ten years been uniform. The population density is heaviest centering in New York City, reaching a maximum on Manhattan Island (New York County) of more than 88,000 per square mile. The population concentrations rapidly decrease, in a comparatively short distance from the center of New York City, with a density of only 82 per square mile in Putnam County in New York State and 98 per square mile in Hunterdon County in New Jersey. However, the outer counties of this area showed the greatest rate of increase in the past decade, as seen in Nassau and Suffolk Counties in New York, and in Middlesex and Morris Counties in New Jersey.

This trend of population increase in the suburban fringes is of particular significance to water pollution control. This population trend, and eventually the movement of light and then perhaps heavier industry, is toward the areas now serving the central region as a watershed catchment area. To safeguard and maintain the quality of these water supplies under these new population and industrial pressures will necessitate extreme vigilance and control of the water resources of these regions.

The New York - New Jersey Metropolitan Area economically represents the greatest concentration of wealth, industry and business in the entire country. Over 20 percent of the industrial establishments of the Nation are located here, employing 10.7 percent of the production workers and producing 12.5 percent of the value added by manufacture. This industrial representation is not limited to light industry and those usually associated with unimportant waste problems but includes representation of most of the important types of waste producing industrial activities; e.g., chemical, petroleum and coal, paper, and food processing.

The distribution of the industrial activity, on a unit basis, shows the highest concentration on Manhattan Island (New York County) followed by Kings County (Brooklyn).

The area based on the lower stretches of the Hackensack, Passaic, and Raritan Rivers and along Arthur Kill, contains a considerable number of heavy industries, principally in chemicals, petroleum and coal products, and paper and pulp.

A recent analysis of the 1948 Census of Business by the New York Times Research Department notes that retail sales in New York City are almost twice those of the second largest city in the United States, and more than three times those of the third.

Retail trade in the New York market (not quite coincident with this drainage area) accounted for 10.9 percent of the United States total, wholesale trade for 22.1 percent, service trade 18.4 percent, hotels 15.9 percent, and amusements 17.4 percent. This intense economic activity is carried on in an area of only about 0.1 percent of the entire country.

The labor force of the New York - New Jersey Metropolitan Area is distributed through a diversified group of occupations. The largest is found in manufacturing, followed by those in retail trade, and then wholesale trade. As would be expected in an area with a tremendous population, service industries and public utilities, as well as finance, insurance, and real estate employ a very large number of persons. Mining, agriculture, forestry, and fishing employ relatively few people.

In comparison of income-producing activities, manufacturing occupies the largest number of employees, although retail trade has the greatest number of units or establishments. However, the value of products is largest in the wholesale trade, amounting to over 42 million dollars in 1948.

Although agriculture is of minor significance, the extensive carefully-tended truck gardens of Long Island and New Jersey supply a considerable portion of the fresh vegetable and poultry demands, principally ducks, of the New York market. Throughout the foothill counties of New Jersey and those in New York State, there is a moderate amount of dairying, also supplying the New York market. All in all distributed throughout this region in some 17 counties, there are actually over 9,000 farms, with over 573,000 acres of land in farms. In some counties, such as Somerset in New Jersey, more than 59 percent of the county is farmland. Over 43,000 people live on the farms but it might be expected that some of these also have employment in other occupations.

The net result of the economic activity of this area is found in the effective buying income of the individual, either on a per capita basis or per family. The effective buying income in the 17 principal counties in 1949 was greater than the United States average. In 12 of these counties, the per capita income was greater than the United States average of $1286. On a per family basis, the effective buying income in 1949 was greater in 15 counties than the United States average of $4474. In one county, Westchester of New York, the effective buying income per family ($9942) was one of the highest in the United States.

One of the most important, and perhaps the most significant economic feature of this area, is the Port of New York around which the entire region has developed. Today the Port of New York is the crossroads of the world shipping lanes in addition to its great domestic waterways traffic. The Port of New York is not only outstanding in foreign trade, but is also the outstanding coastal port nationally, in volume of domestic water-borne trade. Houston, the second largest coastal port in the Nation, handled less than a quarter of the domestic tonnage of the Port of New York in 1949.

The major items of coastwise, internal, and intraport trade are bulk commodities, such as petroleum and petroleum products, coal, phosphate, sulfur, sand and gravel. These materials account for as much as 70 to 80 percent of all of this traffic. Ordinarily inbound cargo far exceeds outbound cargo in New York coastwise shipping. This is due to the fact that outbound freight is less bulky consisting primarily of manufactured goods. In foreign trade, the Port of New York is the undisputed leader in the world. During 1949, nearly half of the dollar volume of the Nation's waterborne trade with other countries flowed through the Port. Tonnage-wise, the Port accounted for 18 percent of the National total. However, the Port's larger share of dollar volume is explained by its greater proportion of package cargo, which has a higher value per pound than bulk commodities, such as coal, petroleum, and cotton, which predominate at other ports. The servicing of ships, such as providing food and stores, repairing and burdening, is also a large source of port revenue.

With the population growth in the peripheral areas, industry may tend to follow, since long hours of commuting from home to work may not be conducive to good labor relations. As the population and industry move out onto the developed watersheds, water pollution control becomes more and more important. Whether adequate water and sewage treatment can keep pace with this expansion will determine whether industrial development and general economy of the region will increase or stabilize at a fixed level. In several areas, this problem has already become quite critical, such as in the Lower Raritan Valley. Although the Raritan Valley problem is one of the more recent examples, pollution has been a serious problem of the New York - New Jersey Metropolitan Area for the last 50 years.

USES OF WATER RESOURCES

The streams and waterways of the New York - New Jersey Metropolitan Area have many diversified water uses. The headwater streams of nearly all the rivers have been developed as potable water supplies (Appendix B). On the Raritan River the Somerville Water Company and Elizabethtown Water Company obtain their water supplies for domestic use at the junctions of the North and South Branches, and Raritan and Millstone Rivers respectively. Lawrence Brook, a small tributary of the Raritan River, furnishes the water supply of the City of New Brunswick. Several potable water supplies have even been developed on the small Rahway River which flows through a heavily urbanized area. Almost all the headwaters of the Passaic River are developed for potable water supplies, serving the major population centers of northeastern New Jersey. The City of Jersey City has a storage reservoir of approximately five billion gallons capacity located on the Rockaway River. The Passaic Valley Water Commission obtains its supply of potable water from intakes on the Passaic River at Little Falls, using about 60 million gallons per day (mgd). The North Jersey District Water Supply Commission, a State agency serving several municipalities and the City of Newark has developed extensive water catchment areas and reservoirs on the Wanaque and Pequannock Rivers. Of the 949 square miles of the Passaic River drainage, 773 square miles are potable water catchment areas.

On the Hackensack watershed 114 square miles are used for potable water catchment which is stored in the Oradell Reservoir at New Milford. The impounded water is a source of supply of about 40 mgd for the greater part of Bergen County and a small part of Hudson County.

In Westchester County, the multitude of small streams which flow into the Hudson River have been extensively impounded to provide potable water reservoirs. In addition to the development of the Croton River as part of the New York City Water Supply and now furnishing about 330 mgd, about one-third of its daily consumption, there are some 10 other small and large potable water reservoirs in this county.

Ground water is the only water source that has been extensively developed for domestic and industrial uses on Long Island. Surface water obtained from mainland sources is being used to an increasing extent as withdrawal of ground water has been reduced or discontinued in Brooklyn and Queens.

The upland watersheds in addition to impounding and intake systems have been widely developed for recreational purposes, such as fishing, boating, and use by wildlife, with control measures to protect the watersheds from pollution. An example of a recreational development in this area is seen in the Palisades Interstate Park, where an area of many thousands of acres has been developed, centering on the lakes and streams of the Bear Mountain region. It has been recognized that the watershed areas must be maintained at the highest water quality standards to protect water resources for human consumption and also to maintain the recreational areas for the metropolitan region.

In the tidal waterways and ocean waters bordering on this drainage region there has developed one of the most intensive water uses in the nation. In addition to the tremendous volume of shipping, both foreign and coastal, which funnels into New York Harbor and adjacent waterways, these coastal waters provide an unmatched recreational facility for the 12,800,000 people of this region.

Within the city limits of New York there are about 200 miles of boundary waters of which 16.5 miles have been developed into public bathing areas. Competing for the remaining choice waterfront locations are the parkways, parks, housing developments, industrial sites, and shipping activities. Of the first three noted, many have been delayed in their development due to pollution and many have been postponed until pollution has been adequately controlled.

On Long Island 12 State parks bordering on the ocean or located where their activities are dependent on water facilities are visited annually by more than 6,000,000 persons. Jones Beach, one of these State parks and a model for all public bathing developments has become one of the outstanding recreational attractions.

In addition to the thousands who use party fishing boats for excursions to the nearby coastal fishing areas there are more than 160 yacht clubs with anchorage facilities. It has been estimated that there is $15,000,000 invested in the charter and party boat fishing in this area with a minimum annual net of about $750,000. The total number of vessels used principally for recreational purposes is almost beyond calculation. However, in the first quarter of 1950, there were nearly 48,000 non-commercial machine-propelled vessels over 16 feet in length registered in the New York District of the Coast Guard. This number does not include, of course, the untold numbers smaller than 16 feet, not machine-propelled, or operating solely on inland waters.

These same coastal waters also support a sizeable development of shellfishing, and commercial fishing. However, the extent of the fisheries of this region are difficult to evaluate since fishery landings at the Port of New York may come from other fishing regions, such as the offshore fishing banks. The commercial catch and its value, however, is small as compared to other fishery areas of the country.

The waterways of the New York Harbor area provide a convenient source of industrial water but principally for cooling purposes since the water is salt or brackish. Industrial water consumption in the New York - New Jersey Metropolitan Area amounts to more than 1800 mgd of which approximately 3 percent is fresh water. It has been estimated by the Interstate Sanitation Commission that 83 industries use 1742 mgd of salt water in their industrial operations. About 74 percent is used for cooling purposes only and the remainder of about 459 mgd contain waste materials when discharged.

The existing primary water uses and stream status are shown on Map No. 1.

POLLUTION CONTRIBUTED TO WATER RESOURCES

To facilitate the discussion of pollution contributed to water resources, this area has been divided into nine subregions of receiving waterways, which can be considered geographical entities in relation to the problem of water pollution.

These regions are as follows:

1. The Hudson River to the Battery. This area is defined by the northern boundary of Westchester County, New York and the Battery at New York City and includes those tributary streams flowing into the Hudson between these two points.

2. Upper New York Bay and East River. This area includes Upper New York Bay from the Battery to a line from Fort Wadsworth to Fort Hamilton at the Narrows, and the East River from the Battery, extending north and northeastward to a point between Fort Totten and Fort Schuyler at the entrance of Long Island Sound.

3. Long Island Sound. This area extends from the line between Fort Schuyler and Fort Totten, eastward along the North Shore of Long Island and includes Gardiners Bay, the Peconic Bays, and Flanders Bay. Also the Bronx County and Westchester County Shore of Long Island Sound to the Connecticut State Line is included.

4. Newark Bay, Kill van Kull, and Arthur Kill. This area includes the tidal waters of Kill van Kull, Newark Bay to the mouth of the Hackensack and Passaic Rivers, and Arthur Kill, from Newark Bay to the point where it joins the Raritan River and Raritan Bay.

5. The Hackensack River.

6. The Passaic River.

7. The Raritan River.

8. Lower New York Bay, Raritan Bay, and Sandy Hook Bay. This area extends from the line between Fort Wadsworth-Fort Hamilton, down Lower New York Bay along the southeast shore of Staten Island, thence eastward along the south shore of Raritan Bay to Sandy Hook.

9. South Shore of Long Island. This area extends from Fort Hamilton, eastward along the south shore of Long Island including its Atlantic coastal beaches and its estuaries and tidal waterways of the Great South Bay and other areas of the south shore.

A summary of available data on sources of pollution in the New York - New Jersey Metropolitan Area drainage shows 241 municipal discharges, treated and untreated. These outfalls discharge the sewage from about 12,167,000 persons (Table A) or nearly 95 percent of the estimated population of the region.

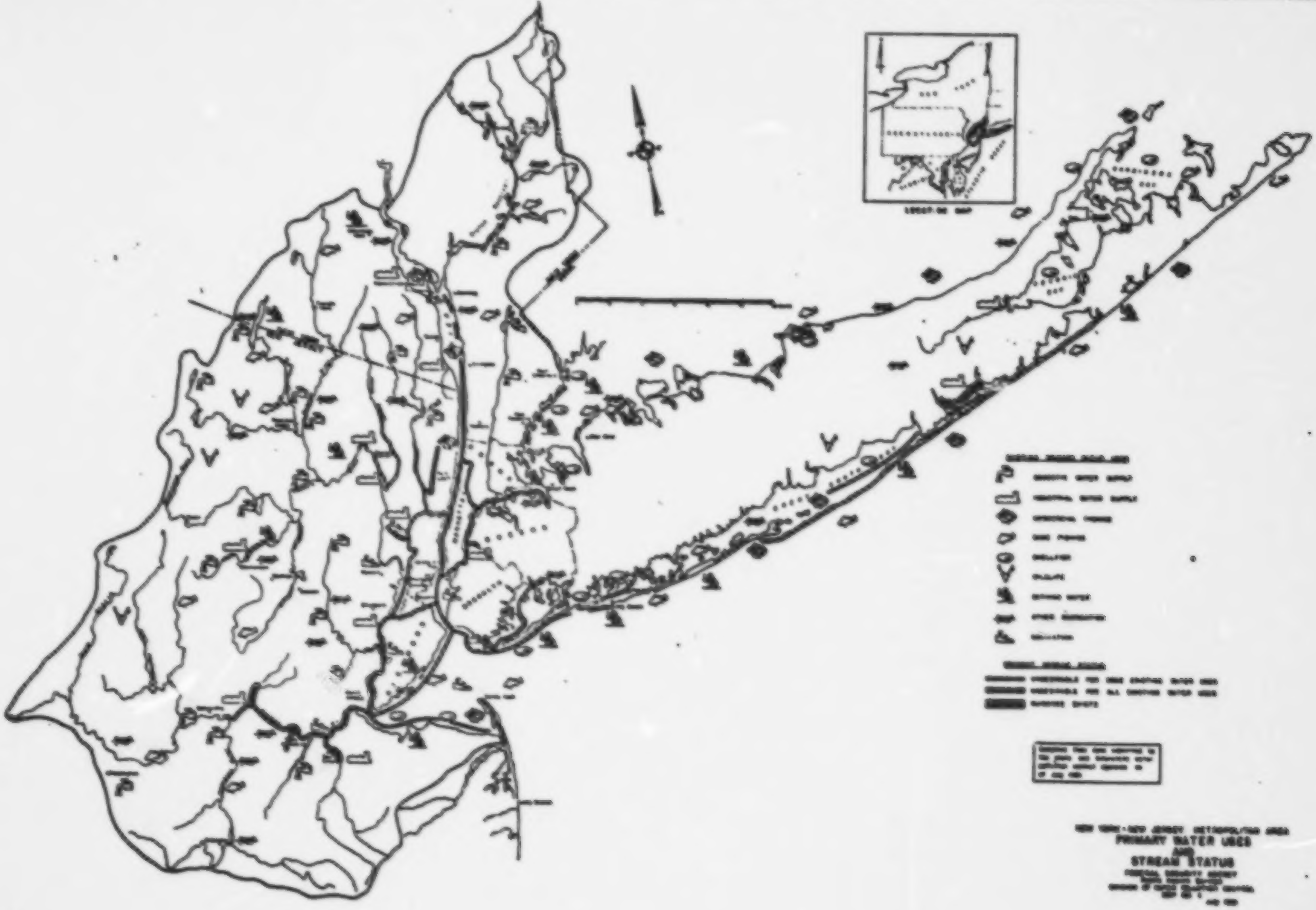

NEW YORK-NEW JERSEY METROPOLITAN AREA
PRIMARY WATER USES
AND
STREAM STATUS

TABLE A

NEW YORK - NEW JERSEY METROPOLITAN AREA

SOURCES OF POLLUTION

July 1951

MUNICIPAL *

Subregions	Sources of Pollution (Number of Municipal Outfalls)**	Population Served by Sewerage Systems
1. Hudson River	46	1,515,600
2. Upper N.Y. Bay & East River	15	6,833,500
3. Long Island Sound	30	350,700
4. Newark Bay, Kill van Kull & Arthur Kill	14	878,900
5. Hackensack River	33	378,600
6. Passaic River	34	332,100***
7. Raritan River	31	288,350
8. Lower N.Y. Bay, Raritan Bay & Sandy Hook Bay	18	46,450
9. South Shore of Long Island	20	1,543,300
TOTAL	241	12,167,500

Having data on pollution load discharged to watercourse			Amount of Pollution Discharged to Watercourse (In Terms of Equivalent Number of People)
	55	3,745,850	1,218,200

---

* Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns; significant institutions, resorts, recreational centers or other population centers.

** Major discharges treated and untreated.

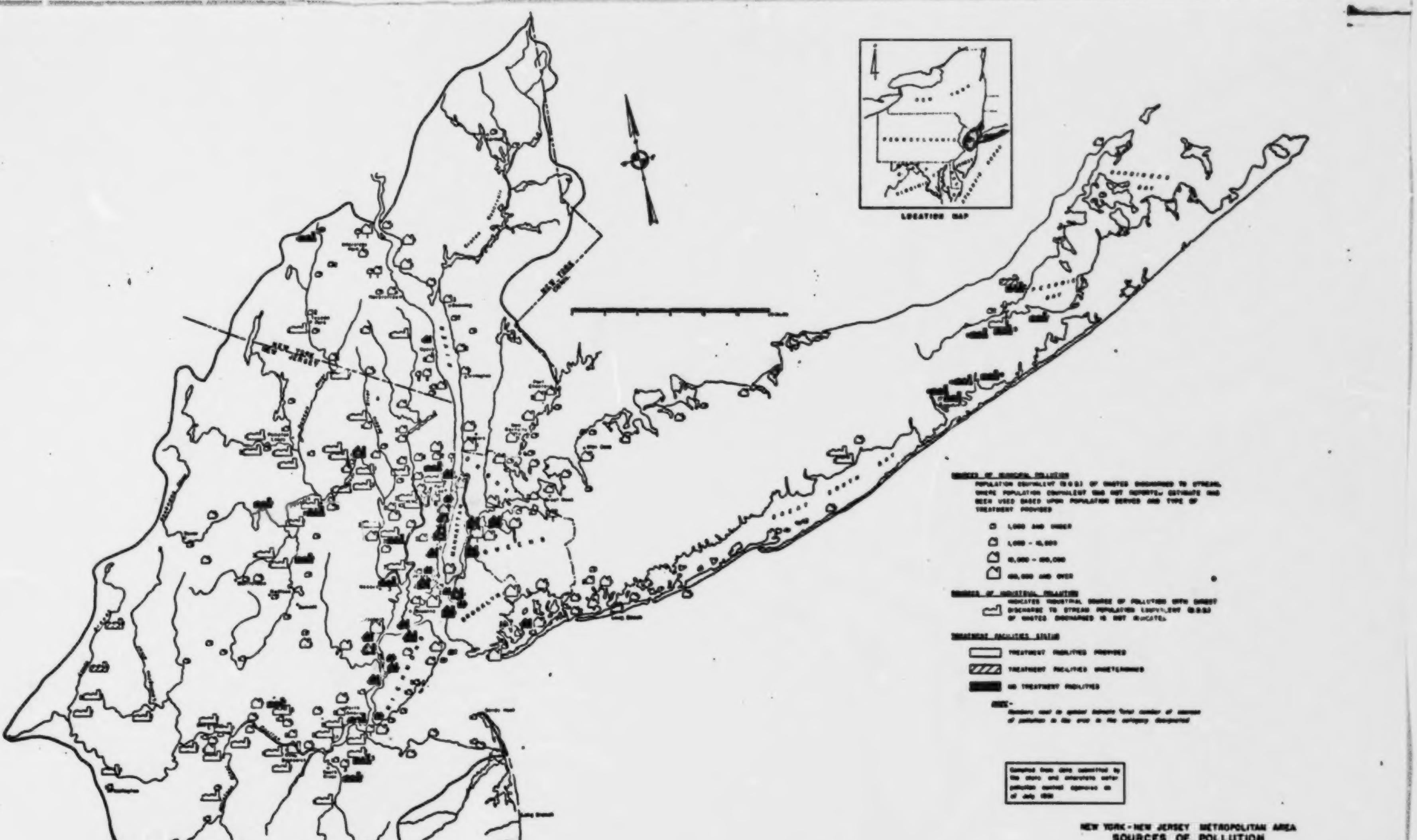
***Sewage from an additional 1,100,000 population living in the Passaic Valley is diverted to Upper N.Y. Bay and is included in item 2.

At only 55 of the 241 major municipal discharges or outfalls is the amount of pollution discharged to the watercourse available in terms of equivalent number of people but these figures indicate treatment facilities provide an average reduction in pollution load of about 67 percent.

The location of the municipal discharges in this geographically and hydrologically complex area is of particular significance. As noted in Table A, the largest number of municipal discharges are found in the stretch of the Hudson River from the northern Westchester County boundary to the Battery, but in terms of served population the Upper New York Bay and East River section receives the greatest contribution. This is of course due to the large New York City treatment plants located on the East River and raw discharges into these bodies of water. The outfall of the Passaic Valley Sewerage Commission is also located in the Upper Bay although its treatment plant is located on Newark Bay. The seemingly large population served on the South Shore of Long Island is principally due to the New York City treatment plants located at the western end of Long Island and alone serve 1,368,000 of the total of 1,543,300 persons served in this subregion. The relatively large served population from only 14 discharges in the Newark Bay, Kill van Kull and Arthur Kill area is again a reflection of an area of high population density. The Passaic, Hackensack, and Raritan Rivers have just about the same number of discharges (31 to 34) but show differences in population served which reflect the degree of urbanization of their drainage areas. Lower New York Bay, Raritan Bay, and Sandy Hook Bay, contiguous bodies of water, have a scattering of 18 outfalls, along their shores, which are discharging treated and untreated sewage from only 46,450 persons.

The contribution of 415 industrial discharges to the pollution of the waters of this region has been reported, (Table B). The Interstate Sanitation Commission has just completed an industrial survey of its District and preliminary figures indicate that there are 238 industries of unspecified waste types contributing pollutional discharges directly to the waters in the New York - New Jersey area. The total volume of discharge of the 238 industries amounts to about 1376 mgd, of which 495 mgd contain waste materials (Appendices C & D).

Map No. 2 shows the sources of pollution and existing treatment facilities.


LOCATION MAP
NEW YORK
NEW JERSEY
1,000 AND UNDER
1,000 - 10,000
10,000 - 100,000
100,000 AND OVER
TREATMENT FACILITIES PROVIDED
TREATMENT FACILITIES UNDETERMINED
NO TREATMENT FACILITIES

NEW YORK - NEW JERSEY METROPOLITAN AREA
SOURCES OF POLLUTION
AND
EXISTING TREATMENT FACILITIES
FEDERAL SECURITY AGENCY
Public Health Service
DIVISION OF WATER POLLUTION CONTROL
MAP NO. [illegible]

TABLE B

NEW YORK - NEW JERSEY METROPOLITAN AREA

SOURCES OF POLLUTION

July 1951

INDUSTRIAL *

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent Number of People)
Producing Organic Wastes	44	539,480
Producing Organic Wastes	107	Undetermined
Producing Inorganic Wastes	8	Not Applicable
Producing Wastes of Undetermined Type	239**	Undetermined
Sanitary Sewage Only	17	1,420 (a)
TOTAL	415	xxx xxx xxx

* Industries having separate outlets discharging wastes directly to watercourse.

** The Interstate Sanitation Commission reported 238 industries discharging to the waterways of the New Jersey and New York sections of the Interstate Sanitation District. Waste types were not identified. See Appendices C and D for classification and location of these industries.

(a)Data from 9 sources.

DAMAGES TO WATER RESOURCES FROM POLLUTION

Several of the streams of this area have been badly damaged in the past by pollution, which has effectively acted to limit their industrial, recreational and residential development. One of the classic examples has been the Passaic River, which was very badly polluted until the formation of the Passaic Valley Sewerage Commission and the building of its trunk sewer. The sewer was completed in 1924 and full service to the various municipalities was in operation by 1927. In recent years the River has slowly been reclaimed but its current status has not been completely reported.

The Raritan River, from the area of Somerville to its mouth, has also become badly overloaded with pollution, both municipal and industrial. The area is being limited in its residential and industrial expansion due to the inadequacy of existing treatment facilities which would only be further overburdened and would discharge untreated or inadequately treated sewage to the stream.

The location of New York City in respect to its surrounding waterways with their tremendous volumes put it in a very favorable situation with respect to its growth and adequacy of sewage disposal. However, around the turn of the century it became evident that more sewage was going into the waters of the Hudson and East Rivers than these waters were able to assimilate without creating nuisance conditions.

The famous 1914 report of the Metropolitan Sewage Commission recommended a drainage system for New York City which would provide many outfalls into the Hudson and East Rivers from the Island of Manhattan; also interceptors and drainage districts which would carry sewage to Jamaica Bay, the Upper East River, and a principal outlet island some five or six miles off Coney Island.

This early report assumed that the waters of the rivers and their circulation would be sufficient to keep them free of nuisance conditions. However, starting in 1914, systematic studies of the dissolved oxygen in the surrounding waters showed a steady deterioration. Conditions had become so bad by 1924 that the New York State Legislature deemed it advisable to take some action and appointed in that year a joint legislative committee to investigate the pollution of waters and to examine into and report on the sewage and garbage disposal and "to secure cooperation of the States of Connecticut and New Jersey and the Federal Government to that end." In its final report on February 28, 1927, it stated that sewage treatment was immediately necessary to prevent offensive conditions in the waters of the metropolitan district. The committee urged the immediate adoption of a comprehensive plan for greater New York.

From the 1927 reports of the Joint Legislative Committee appointed by the New York State Legislature to investigate the pollution of waters in the New York City area, the following is quoted to show the extent of pollution in the waters about New York at that time.

> "The conditions in the Harlem and East Rivers are a great menace to the health of the millions of people of the City of New York and these rivers together with Gowanus Canal and Newtown and Coney Island Creeks, are practically open sewers. A serious situation confronts the people of the Borough of the Bronx through the dangerous pollution of the waters in the vicinity of its bathing beaches caused by the discharge of sewage. At City Island and Pelham Bay where bathing is permitted sewers empty on to the bathing beaches and at low tide beaches are strewn with solid matter floating from the sewers which the tide is unable to wash away. At Pelham Bay, which is a public bathing beach used by thousands of bathers daily during the summer months, there is a sewer line projecting directly through the bathing beach, which sewer carries off human matter from the several thousands of inhabitants on the summer camp settlement known as Orchard Beach."

> "At Hart's Island, which is situated on Long Island Sound and but a short distance from City Island and Pelham Bay bathing beaches, there is a New York City Penal Institution housing several thousand prisoners, many of whom are suffering from communicable diseases. The sewage from this institution is emptied into the waters facing the bathing beaches through 8 sewer pipe lines."

This report highlighted the potentiality of danger to public health in this area at that time. There are many records of enteric disease being traced to the consumption of infected shellfish taken from the nearby waters of New York City.

During the bathing season of 1950 it was necessary on several occasions, due to excessive storm flows, to temporarily close certain bathing areas on the Westchester County shore of Long Island Sound because of the inability of the inadequate treatment facilities to cope with the combined storm and sewage flows.

Fortunately for the development of this area, the protection of public water supplies from pollution has been emphasized. However, there have been localized instances where industrial pollution has endangered on caused troublesome problems in water supplies, particularly in the Passaic River watershed area.

The Long Island watershed, which is practically all ground water development, has had several instances of industrial waste contamination. The danger of ground water contamination on Long Island is becoming more acute. The extremely heavy urbanization which the Island has undergone in the last decade will eventually affect not only the efficiency of catchment areas due to coverage by more roads and houses, but also the potential danger from leaching septic tank effluent in the sandy soil. One example of the potential danger from contamination is the extremely heavy concentration of homes in areas such as Levittown, where each of the more than 16,000 houses has a separate cesspool. It is evident that such a concentration of cesspools could possibly endanger the ground water supply, particularly where it is comparatively close to the surface as on Long Island.

In addition to the individual home subsurface disposal systems there are six municipal plants which discharge to ground water through leaching beds. These are the plants at Hempstead, Garden City, Mineola, Mitchell Field, Meadowbrook Hospital, and the Nassau County Sanatorium. The Hempstead, Garden City, and Mineola plants are to be abandoned when the Nassau County District #2 plant goes into operation.

The extensive use of the tidal waters in this area for navigation purposes, and their simultaneous use for sewage disposal, raises a question as to the effect of pollution on this water resources use. The discharge of untreated sewage into the waters of New York Harbor has led to local nuisances, particularly where the sewer outfalls are located in or between the slips of ships and ferries. Passengers and commuters on these vessels in many instances complain of the noisome odors arising from these areas. Similarly, about the outfall of the Passaic Valley

Sewerage Commission in Upper New York Bay off Robins Reef, commuters on the Staten Island ferry have complained of odors emanating from the discharge area.

The load of organic matter discharged into these waters has measurably reduced the dissolved oxygen, as has been shown in the yearly summaries of oxygen in these waters that have been carried out since 1914 by New York City authorities. It has been stated that the pollution in the harbor has materially improved the maintenance of the wharfage and underwater wood structures by limiting their destruction by marine borers. However, evidence gathered from many harbors around the world points to the contrary, that is, reduction in marine borer activity is not necessarily correlated with increased pollution. Fluctuations in marine borer activity are probably correlated with other undetermined factors in the ecology of these specific organisms and have very little to do with pollution on the order found in New York Harbor.

The damages to aquatic life, recreational facilities, and real estate have been perhaps the three most important sustained in this area by the pollution load carried in these waters. It has been estimated by the Interstate Sanitation Commission that the economic losses due to pollution over a 20-year period amounted to $100,000,000. This was due principally from depletion and abandonment of fish and shellfish resources and losses sustained by recreational centers.

Included in the sum cited has been not only reduction in land values but also losses due to unemployment from abandonment of the facilities, loss of income in connection with bathing beaches, and rentals of shellfish grounds.

In Raritan Bay, shellfish ground rentals dropped from a value of $32,000 per year in 1917, to $5,000 per year in 1935, due to the fact that more and more areas were restricted to the taking of these marine forms because of sewage pollution. In all, a total annual loss has been estimated of about $5,000,000 a year from all sources.

Due to pollution it has been necessary each year for the New York City Health Department to carry out surveys of its boundary waters, particularly in those areas used for recreational purposes, and to determine whether beach areas are suitable for recreational use. This is a very important local issue, not only followed by the City, but by the local newspapers. One-newspaper actually conducts private surveys in the New York City area and adjacent beaches of Long Island and New Jersey, which serve the entire metropolitan area. In New Jersey, the State Health Department carries out similar surveys to determine water quality at bathing beaches along the State's coastal waters.

The problem of recreational facilities being closed or endangered by pollution will continue until complete pollution abatement prevails. Tremendous population pressures demand the maximum utilization of every available waterfront area. To cite a most recent example, the Palisades Interstate Park Commission recently announced for 1951, that the beach installations at Nyack and Haverstraw would not be open for bathing because of the dangerous pollution in the Hudson River. Nyack and Haverstraw beaches are 30 and 35 miles north of New York respectively and were popular for bathers from a large area, especially New Jersey residents.

Pollution in the Hudson, according to the Commission's statement, is becoming a major problem to communities as far north as Poughkeepsie.

The extensive duck farming on the Moriches and Flanders Bays drainage basins at the eastern end of Long Island has severely damaged the valuable resources of that area. The New York Water Pollution Control Board's report on this pollution described the tidal waters of Suffolk County as among its most valuable resources, supporting a vast shellfish industry, numerous excellent bathing beaches, a large commercial recreational fish industry, pleasure boating, and general recreation. Most of the numerous duck farms are located on or adjacent to the waterways. Pollution from these farms is considerable and consists of unstable organic matter, quantities of suspended solids, and an extremely high concentration of coliform organisms. The pollution washing from these farms fills the channels and produces coliform indexes which necessitate closing of the shellfish beds. In addition to the excessive coliform indexes, the organic load produced by the farms has reached into Moriches Bay and circulated into Great South Bay. This has caused further problems with the shellfish industry. The Great South Bay of Long Island, home of the famous blue point oyster, with its shellfish industry alone supporting nine companies with a payroll of over $500,000 annually, has been severely affected.

In recent years, Great South Bay and certain adjacent waters have shown a sharp decline in either quantity or quality of the shellfish production or both. This decline is due to an ecological change affecting the growth of the shellfish. In the case of Great South Bay the underlying factor seems to be an unbalanced fertilization of its waters which has been traced to the duck farm pollution in Moriches Bay.

It has been stated that the famous shad runs of the Hudson River and adjacent waters have been materially affected by pollution. This question is now under investigation by the U. S. Fish and Wildlife Service. It has also been noted by the shad fishermen that pollution affects the flavor and quality of the shad. They indicate that these fish can take on distinct flavor depending on the condition of the water. In some of the smaller streams such as the Raritan, pollution may have a more direct influence on the shad run than in the Hudson, with its greater volume of flow.

BENEFITS RESULTING FROM POLLUTION PREVENTION AND ABATEMENT

It is impossible in the time and space alloted in the preparation of this report to cite in detail the manifold benefits resulting from the prevention and abatement of pollution thus far accomplished. While it is true that a great deal needs yet to be accomplished, it is only natural that the most damaging pollution would receive the earliest attention. Thus the accomplishments to date have been most beneficial.

All of the watershed areas within this basin have been developed to provide water supplies for the municipalities. Had there been no restrictions on the discharge of pollution into these watershed areas, practically all of the waters would have been befouled and rendered useless for this purpose. With the serious shortage recently confronting

New York City and Northern New Jersey municipalities, it takes little imagination to comprehend the added seriousness of any situation wherein New York City would be deprived of a third of its current water supply, and the Cities of Newark, Jersey City and other satellite communities deprived of their entire supply. The treatment of sewage and industrial wastes prior to discharge into these potable water catchment areas has reaped benefits in public health and economic growth far too great to be capable of estimation. Furthermore, with public health being the valuable intangible asset that it is, benefits cannot be translated into dollars and cents.

The Passaic River below Paterson, prior to the construction of the Passaic Valley Trunk Sewer, was nothing more than an open drain for sewage and industrial wastes. While its current condition no doubt leaves much to be desired, it is vastly improved from what it was prior to the construction of this sewer.

The lower reaches of the Raritan River are among the most polluted waters in the country. Again imagination fails to describe how much worse those conditions would be had full industrial development been permitted and no treatment of domestic sewage and industrial wastes required.

Enormous improvement in the East River has resulted from the operation of the Wards Island Plant. Recreational use of waters in Long Island Sound and along the South Shore of Long Island at Coney Island and many other places would have been denied to millions of people had it not been for the treatment facilities constructed to date. Added protection will result from the works now under construction.

The reduction in oil pollution through the efforts of the Supervisor of New York Harbor has resulted in tremendous benefits. This form of pollution is one of the most damaging and also dangerous because of the possible fire hazard. In spite of continuous patrolling considerable oil pollution is still in evidence, particularly in the Kills around Staten Island.

From the foregoing it can be seen that a tabulation of benefits would be a major undertaking. Suffice to say that the very existence of this great metropolitan area is dependent upon an adequate water supply of satisfactory quality, and that eternal vigilance against indiscriminate pollution must be maintained. Recreational facilities must also be provided for the tremendous weekend and holiday crowds where rest and relaxation can be obtained without the unnecessary danger of contracting disease.

POLLUTION PREVENTION MEASURES IN EFFECT

Of the 241 discharges of treated and untreated municipal sewage reported, 105 or about 44 percent receive primary treatment; 101 secondary treatment or 42 percent; and 35 receive no treatment or about 14 percent. The 105 primary treatment plants include 19 septic tanks and 8 screening plants. This breakdown of treatment types shows that the sewage of 22 percent of the population receives primary treatment, 34 percent secondary, and 44 percent no treatment (Table C).

TABLE C

NEW YORK - NEW JERSEY METROPOLITAN AREA

EXISTING TREATMENT FACILITIES

July 1951

MUNICIPAL *

Subregion	No. of Treatment Plants			Population Served		
	Primary	Secondary	No Treatment	Primary	Secondary	No Treatment
1. Hudson River	28	9	9	558,050	13,350	944,200
2. Upper N.Y. Bay and East River	3	3	9	1,102,500	1,976,000	3,755,000
3. Long Island Sound	22	8	0	259,500	91,200	-
4. Newark Bay, Kill van Kull & Arthur Kill	4	0	10	451,100	-	427,800
5. Hackensack River	17	15	1	210,600	166,900	1,100
6. Passaic River	1	31	2	3,800	188,900	139,400
7. Raritan River	6	25	0	31,100	257,250	-
8. Lower N.Y. Bay, Raritan Bay & Sandy Hook Bay	14	1	3	40,450	5,600	400
9. South Shore of Long Island	10	9	1	65,300	1,458,000	20,000
TOTALS	105 (b)	101	35	2,722,400	4,157,200	5,287,900
		241 (a)			12,167,500	

* Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns significant institutions, resorts, recreational centers, or other population centers.

(a) The following municipalities have more than one treatment plant: Ossining, N.Y.- 2 primary plants; Palisades Interstate Park - 5 secondary plants, 1 primary plant; Briarcliff Manor, N.Y. - 1 secondary, 2 primary plants; Westchester County, N.Y. - 4 screening plants; Jersey City, N.J. - 2 outfalls; Elizabeth, N.J. - 1 primary plant, 1 outfall; Teaneck, N.J.- 3 primary plants; Sayreville, N.J. - 1 secondary, 2 primary plants; North Bergen, N.J. - 2 primary, 1 outfall; New York City - 13 plants, 10 outfalls (See Appendix E for details.) (b) Includes 19 septic tanks, 8 screening plants.

It is noteworthy that the principal discharges of raw sewage are to tidal waterways. The comparatively large population served on the Passaic River, which is receiving no treatment, is principally the contribution of the City of Paterson, New Jersey.

Of the 415 industries reported to be discharging waste materials to the waterways of this area, 181 provide some sort of treatment prior to disposal, 231 have no treatment facilities, and 3 are undetermined as to treatment facilities (Table D). The principal industrial discharges are from food and chemical plants.

Of the 206 municipal sewage treatment facilities now in operation, 121 are considered satisfactory in capacity. Seventy-eight plants are noted as being unsatisfactory in capacity and seven are undetermined. The operation of 165 plants are described as satisfactory, 16 as unsatisfactory, and 25 as undetermined (Table E).

Many of the municipal sewage treatment plants are either obsolete or rapidly approaching overload conditions. For example, in the Hackensack River drainage, where in the past 20 years there has been a very rapid population growth, plant replacement is necessary. This work is now being accomplished by the construction of a trunk sewer and joint treatment plant which will serve at its ultimate extension about 50 communities. Some of these communities are not now sewered.

The adequacy of the 181 industrial waste treatment plants in preventing the discharge of excessive pollution loads to the receiving streams is known for 60 plants. Of these, 46 are satisfactory and 14 unsatisfactory. The capacity of 121 industrial waste treatment plants is undetermined. The operation of 50 is satisfactory, 6 unsatisfactory, and 125 undetermined (Table F).

TABLE D

NEW YORK - NEW JERSEY METROPOLITAN AREA

EXISTING TREATMENT FACILITIES

July 1951

INDUSTRIAL*

		Number of Industrial Plants Having:		
Type Industry	Number of Plants	Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food				
Meat Products	4	3	1	0
Duck Farms	69	0	68	1
Dairy Products	15	10	3	2
Distilleries and Breweries	1	0	1	0
Others**	58	23	35	0
Textile	21	6	15	0
Paper	15	9	6	0
Chemical	86	45	41	0
Rubber	4	3	1	0
Petroleum & Coal	20	14	6	0
Primary Metals	12	6	6	0
Fabricated Metals	22	13	9	0
Other Mining	13	7	6	0
Miscellaneous	75	42	33	0
TOTAL	415	181	231	3

* Industries having separate outlets discharging wastes directly to watercourse.

** Includes 52 reported only as food industries.

TABLE E

NEW YORK - NEW JERSEY METROPOLITAN AREA

ADEQUACY OF EXISTING TREATMENT FACILITIES

July 1951

MUNICIPAL *

Adequacy with Relation To;

Subregion	Capacity			Operation		
	Satisfactory	Unsatisfactory	Undetermined	Satisfactory	Unsatisfactory	Undetermined
1. Hudson	27	9	1	26	2	9
2. Upper N.Y. Bay & East River	4	2	0	5	0	1
3. Long Island Sound	18	11	1	22	3	5
4. Newark Bay, Kill van Kull, & Arthur Kill	3	1	0	4	0	0
5. Hackensack River	6	24	2	21	8	3
6. Passaic River	21	9	2	31	0	1
7. Raritan River	19	12	0	30	1	0
8. Lower N.Y. Bay, Raritan Bay & Sandy Hook Bay-	9	5	1	9	1	5
9. South Shore of Long Island	14	5	0	17	1	1
TOTALS	121	78	7	165	16	25
		206			206	

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* Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns; significant institutions, resorts, recreational centers or other population centers.

TABLE F

NEW YORK - NEW JERSEY METROPOLITAN AREA

ADEQUACY OF EXISTING TREATMENT FACILITIES

July 1951

INDUSTRIAL *

Subregion	Capacity			Operation		
	Satisfactory	Unsatisfactory	Undetermined	Satisfactory	Unsatisfactory	Undetermined
Hackensack River	4	6	7	7	3	7
Passaic River	24	2	3	22	1	6
Raritan River	18	6	5	21	2	6
South Shore of Long Island **	0	0	2	0	0	2
Interstate Sanitation District***	0	0	104	0	0	104
TOTALS	46	14	121	50	6	125
		181			181	

* Industries having separate outlets discharging wastes directly to watercourse.

** Does not include the industries in the area of the Interstate Sanitation District.

*** For location by county see Appendix D.

Although new completed municipal plants have been slow to show up in the immediate post-war years, work under construction as of July 1, 1951 on seven new plants and enlargement of eight existing plants will serve 2,076,700 persons in 22 municipalities (Table G).

A discussion of pollution control measures in effect must necessarily include mention of the policies and programs of those agencies whose efforts have been primarily responsible for the resulting facilities summarized in the foregoing paragraphs. The New York State Water Pollution Control Board in the State Department of Health, the New Jersey State Department of Health, and the Interstate Sanitation Commission have jurisdiction over pollution in this area. In addition, the Supreme Court of the United States has set forth requirements that must be met by the Passaic Valley Sewerage Commission.

The Interstate Sanitation Commission has jurisdiction over the tidal waters in the Metropolitan Area, known as the Interstate Sanitation District, defined as follows: To New Haven Harbor on the northern shore of Long Island Sound and to Port Jefferson Harbor on the southern shore; the Hudson River from the Bear Mountain Bridge to its mouth; Newark Bay to the mouths of the Passaic and Hackensack Rivers; Kill van Kull and Arthur Kill; Upper and Lower New York Bays; to the Victory Bridge on the Raritan River; Raritan Bay; and the south shore of Long Island to the Fire Island Inlet. The area of the Interstate Sanitation District within the State of Connecticut is outside the confines of the area considered in this report. The Commission has classified the waters in its district as follows: Class A waters are those expected to be used primarily for recreational purposes, shellfish culture, or the development of fish life; and Class B waters are those which are not expected to be used primarily for the foregoing purposes.

TABLE O

NEW YORK - NEW JERSEY METROPOLITAN AREA

PROGRESS IN CONSTRUCTION OF POLLUTION ABATEMENT FACILITIES

July 1951

	Municipal		Industrial	
Year	Sewage Treatment Plants Completed	Design Population	Waste Treatment Plants Completed	Amount of Wastes Treated (In Terms of Equivalent Number of People)
1946	1	500	No	
1947	None			
1948	3 (enlarged)	8,785 (enlarged)		industrial
1949	9 (4 enlarged)	579,400 (79,000 enlarged)		data
1950	3 (2 enlarged)	11,700 (405,000 enlarged)		
1951 (Up to July 1)	7 (3 enlarged)	39,200 (85,100 enlarged)		available
Under Construction as of July 1,	7* (8 enlargements)	1,940,600 (136,100 enlargements)		6

* These 7 new plants will serve 14 municipalities.

The waters classified under Class B can roughly be described by the following boundaries: On the East River the point between Hunts Point and Sands Point; on the Harlem River at the Washington Bridge; on the Hudson River at the George Washington Bridge, south to the line between Fort Wadsworth and Fort Hamilton at the junction of the upper and lower Bay and including Kill van Kull; and Newark Bay to the mouth of the Passaic and Hackensack Rivers; and Arthur Kill south to Outerbridge. The remaining waters of the District are classified as Class A.

Minimum effluent standards have been established for sewage being discharged into waters of the District. For Class A waters the following minimum standard applies:

Removal of floating solids and at least 60 percent of the suspended solids;

Reduction of coliforms to not more than 1 per cc in more than 50 percent of the samples, provided however that in the case of discharge into waters used primarily for bathing, this bacterial standard need not be required except during the bathing season;

Reduction in the oxygen demand of the sewage effluent sufficient to maintain an average dissolved oxygen content in the tidal waters of the District and in the general vicinity of the point of discharge of the sewage into those waters, at a depth of about five feet below the surface, of not less than 50 percent saturation during any week of the year.

This requirement can generally be accomplished by efficient sedimentation and effective disinfection.

The minimum standard for Class B waters requires removal of floating solids and at least 10 percent of the suspended solids and reduction in oxygen demand, so that the receiving waters will not be reduced to less than 30 percent saturation during any week of the year.

It should be emphasized that the foregoing requirements are minimums established by the Interstate Sanitation Commission and that the respective States still retain jurisdiction and may require higher degrees of treatment. By agreement the States have established effective sedimentation throughout the District as the minimum that will be acceptable irrespective of the classifications. Even higher treatment is being provided by most of the New York City plants discharging into Class B waters.

The New Jersey State Department of Health has established effluent standards for all areas in New Jersey. Generally these minimums specify sedimentation, oxidation and disinfection for treatment of wastes being discharged into waters used for potable purposes, and primary treatment plus disinfection for other areas. However, nearly all of the sewage effluents discharging into the inland waters, especially the non-tidal inland waters, also have secondary treatment and disinfection. In the Hackensack River Basin above New Milford and in the Passaic River Basin above the Passaic Valley Sewerage District municipal wastes must be subjected to sedimentation, oxidation, and disinfection before the effluents can be discharged. The effluents from industrial treatment plants are required to meet the same standards as effluents from domestic sewage plants.

The lower part of the Raritan River has been divided into two zones. Zone 1 extends from the junction of the Millstone and Raritan Rivers to the five-mile dam located about 10 miles above New Brunswick. Zone 2 extends from the five-mile dam to the mouth of the river at Raritan Bay. Standards for this stream apply equally to industrial and municipal wastes. The Raritan River Basin above these zones is all potable watershed area where requirements are sedimentation, oxidation and disinfection.

Zone 1 requirements specify that effluents shall contain no free acidity, floating solids, scum, oil, grease or sleek; color must be appropriately reduced; caustic alkalinity, other toxic or deleterious substances, and offensive odors are prohibited; coliforms must be absent in at least 80% of the 1 cc portions examined; and the B.O.D. is limited to a 4-hour average of 70 ppm with a maximum of 90 ppm for any one sample.

The requirements for Zone 2 are the same except that B.O.D. requirements are 100 and 125 ppm respectively.

New requirements have been adopted that will apply when the trunk sewer has been completed. These requirements specify 40 ppm B.O.D. average and 50 ppm maximum.

The New York Water Pollution Control Law requires the Board to group waters into classes according to considerations of best usage in the interest of the public, and to assign standards of quality and purity for each such classification necessary for the public use and benefit contemplated by such classification. Prior to such classification and assignment of quality standards of any specifically designated waters, the Board is required to make proper studies of such water, holding public hearings with reference thereto.

The Moriches Bay Basin in Suffolk County has been surveyed, a report prepared and published and the public hearings on these waters were held May 10, 1951. Surveys have also been conducted in the Peconic River-Flanders Bay area of Long Island and on Sparkill Creek, a tributary of the Hudson River.

Evidence of the effectiveness of the pollution control program in this metropolitan area may be found by the fact that since 1936 the amount of adequately treated sewage in the Interstate Sanitation District has increased from a mere trickle of seven million gallons daily to an enormous quantity of over one billion gallons daily which will be treated when construction now underway is completed. In 1936 there were less than 50 plants in the Interstate Sanitation District as compared to 116 plants now in operation, or which will be in operation at the completion of present construction, and the number of served people will have increased from 250,000 to an estimated 7,350,000.

The program of sewage disposal for New York City is now in a stage of development which has a completion date of 1959. This program became crystallized due to the consent order of the Interstate Sanitation

Commission under date of December 16, 1948, which stipulated that all sewage pollution of the Interstate Sanitation District waters contrary to the provisions and requirements of the tri-state compact, shall cease before the end of December 1959, then furthermore that the City of New York would carry out a minimum construction program by the end of 1953. In this first stage of the program, the City of New York has undertaken to build intercepting sewers, complete the treatment plants now under construction, and build additional treatment works to eliminate discharges that immediately affect waters used for bathing and recreation. The value of the contracts involved in this program is approximately $106,000,000.

The comprehensive plan to treat all of New York City sewage, adopted under the master plan, provides for a total of 17 modern plants to treat some 1,600 million gallons of sewage daily. So far about $69,000,000 has been spent or encumbered on the first-stage program and $62,000,000 committed under contracts in various stages of completion. Work required subsequently to complete the entire program is in the magnitude of $169,000,000. At present the sewage flow of New York City is approximately 1,000 mgd; 40 percent is treated. By spring of 1952, about 65 percent will be treated. This enormous program is being financed on a sewage rental basis. The existing and future sewage treatment works of New York City as envisoned in the master plan, are noted in Appendix E.

In addition to the State and Interstate jurisdictions of this area, there are certain Federal jurisdictions relating to the discharge of materials into these waters. In 1888 the Congress passed an Act entitled,"To prevent obstructive injurious deposits within the Harbor and adjacent waters of New York City by dumping or otherwise and to punish or prevent such offenses." This Act was amended in 1908 and again in 1909. It provides for the appointment of an officer of the Navy who acts under the direction of the Secretary of War to act as Captain of the Port of New York and see to the enforcement of this Act. Essentially the Act prevents the dumping of mud, dirt, sand, dredgings, and any other material within the areas of New York City, and prescribes definite areas where such dumpings can take place.

Another Federal law of even wider scope is found in Section 13, Chapter 425 of the Act of March 3, 1899. This law prohibits the discharge, either from floating craft or from shore, dock or manufacturing plant, of refuse of any kind, other than from streets and sewers, into any navigable water of the United States or into any tributary of such water. This law also prohibits the deposit of material on any bank from which it is liable to be washed into a navigable water. While the primary purpose of the law is to prevent impediments to navigation, the refuse matter prohibited from being discharged may also cause stream pollution.

Oil pollution is controlled by section 3 of the Oil Pollution Act of 1924, which makes unlawful the discharge of oil in the harbor and coastal waters. Under this Act sixty-six violators were cited in court by the Captain of the Port in the fiscal year 1949-50.

POLLUTION PREVENTION MEASURES NEEDED

Although the problems of pollution and pollution abatement were early recognized in this drainage region and the upland watersheds protected as supplies of potable water, the constantly growing urban areas and the obsolescence of existing plants presents this area with a large pollution abatement job yet to be accomplished. Thirty-two new municipal sewage treatment facilities are needed to serve a population of more than 5,200,000. Enlargements are needed at 47 plants to provide satisfactory treatment for 2,300,000 persons. Replacements of obsolete plants are needed at 31 municipalities to serve over 300,000. The needs to provide satisfactory treatment at 11 plants serving only 46,000 are undetermined (Table H).

In some areas such as on the Hackensack and Raritan Rivers, trunk sewers and joint treatment plants are proposed or under construction. Thus while a municipality may be noted in the tables as requiring a plant enlargement or addition the actual pollution abatement project may be accomplished by joining to a trunk sewer.

Not until all industrial surveys are completed and the pollution load assessed will the complete industrial needs be known. Of those industrial establishments that have been noted as having pollution abatement needs, 18 need new treatment facilities, 11 need enlargements or additions, 5 can abate pollution by connecting to a municipal system, and 335 are as yet undetermined. Of those with needs undetermined, 238 are located in the Interstate Sanitation District and 69 are the duck farms on Long Island which in all probability will be required to provide some sort of treatment or pollution abatement facility (Table I).

Pollution abatement needs are shown on Map No. 3.

The status of municipal action on treatment works needed to abate pollution as of July 1, 1951 is as follows: Projects under construction number 15 and these will serve a population of 2,076,700 in 22 municipalities. This is about 26 percent of the served population of the various needed projects. The final plans of 23 projects have been approved and 47 are in active planning stages, whereas 18 are still inactive (Table J).

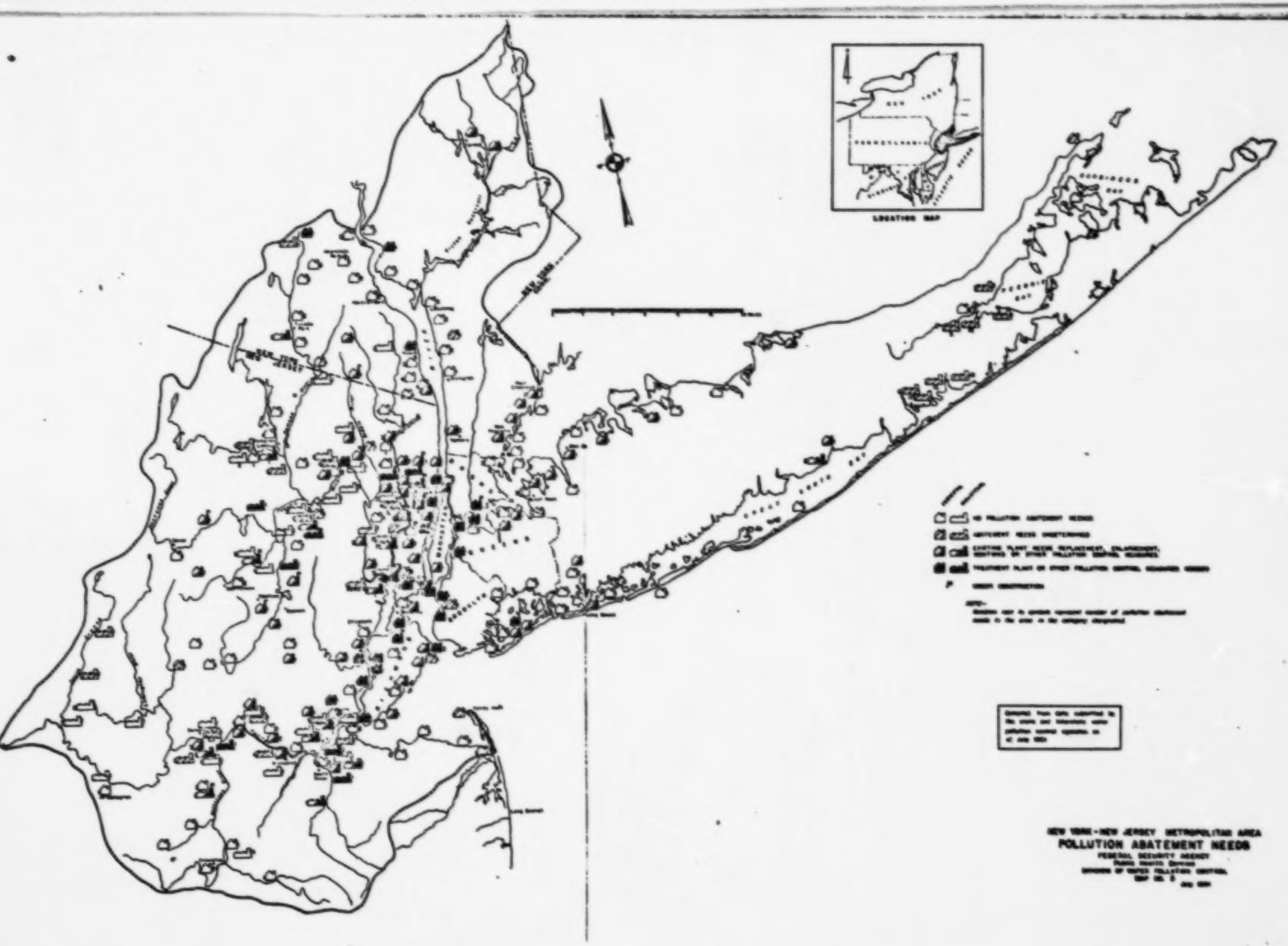
LOCATION MAP
NO POLLUTION ABATEMENT NEEDS
ABATEMENT NEEDS UNDETERMINED
EXISTING PLANT NEEDS REPLACEMENT, ENLARGEMENT, ADDITIONS OR OTHER POLLUTION CONTROL MEASURES
TREATMENT PLANT OR OTHER POLLUTION CONTROL MEASURES NEEDED
UNDER CONSTRUCTION
NEW YORK-NEW JERSEY METROPOLITAN AREA
POLLUTION ABATEMENT NEEDS
FEDERAL SECURITY AGENCY
Public Health Service
DIVISION OF WATER POLLUTION CONTROL

TABLE H

NEW YORK - NEW JERSEY METROPOLITAN AREA

WASTE TREATMENT NEEDS - MUNICIPAL*

July 1951

	Needs									
	New Plant		Enlargement or Additions		Replace Existing Plant		No Project Required		Undetermined	
Subregion	No.	Pop. Served By Facilities	No.	Pop. Served By Facilities	No.	Pop. Served By Facilities	No.	Pop. Served By Facilities	No.	Pop. Served By Facilities
1. Hudson River	9	944,200	7	461,500	2	2,700	27	105,800	1	1,400
2. Upper N.Y. Bay & East River	8	3,752,300	3	1,310,500	0	0	3	1,768,000	1	2,700
3. Long Island Sound	0	0	7	134,000	4	101,300	18	112,400	1	3,000
4. Newark Bay, Kill van Kull, & Arthur Kill	10	427,800	1	115,000	0	0	3	336,100	0	0
5. Hackensack River	0	0	8	78,700	16	174,600	6	92,300	3	33,000
6. Passaic River	2	139,400	8	110,700	1	2,600	21	73,800	2	5,600
7. Raritan River	0	0	7	104,700	4	60,100	19	122,950	1	600
8. Lower N.Y. Bay, Raritan Bay & Sandy Hook Bay	2	100	5	24,500	0	0	9	21,450	2	400
9. South Shore of Long Island	1	20,000	1	1,200	4	47,300	14	1,474,800	0	0
TOTALS	32	5,283,800	47	2,340,800	31	388,600	120	4,107,600	11	46,700

* Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns; significant institutions, resorts, recreational centers or other population centers.

TABLE I

NEW YORK - NEW JERSEY METROPOLITAN AREA

WASTE POLLUTION ABATEMENT NEEDS - INDUSTRIAL*

July 1951

Subregion	Needs New Plant or Other Measures	Enlargements or Additions	Replace Existing Plant	Connect to Municipal Sewer	No Project Required	Undetermined
Hackensack River	10	1	0	3	4	12
Passaic River	3	3	0	1	24	5
Raritan River	5	6	0	0	18	7
South Shore of Long Island **	0	1	0	1	0	73
Interstate Sanitation District	0	0	0	0	0	238
TOTALS	18	11	0	5	46	335

* Industries having separate outlets discharging wastes directly to watercourse.

** Does not include industries in the area of the Interstate Sanitation District.

TABLE J

NEW YORK - NEW JERSEY METROPOLITAN AREA

CURRENT STATUS OF MUNICIPAL ACTION ON POLLUTION ABATEMENT NEEDS

July 1951

	Status of Action - Number of Municipalities*			
Subregion	Inactive	Active Planning	Final Plans Approved	Under Construction
1. Hudson River	4	7	7	-
2. Upper N.Y. Bay & East River	1	8	-	2
3. Long Island Sound	5	-	4	2
4. Newark Bay, Kill van Kull & Arthur Kill	-	5	4	2
5. Hackensack River	-	12	2	10
6. Passaic River	3	2	2	4
7. Raritan River	-	11	-	-
8. Lower N.Y. Bay, Raritan Bay & Sandy Hook Bay	5	2	-	-
9. South Shore of Long Island	-	-	4	2
TOTALS	18	47	23	22**
Population to be served	592,900	4,756,000	587,600	2,076,700

* Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns; significant institutions, resorts, recreational centers, or other population centers.

**A population of 2,076,700 in 22 municipalities will be served by 15 treatment plants under construction consisting of seven new plants and enlargement of eight existing plants.

Industrial action to abate pollution shows 4 inactive projects, 22 in active planning stages, 6 under construction and 2 undetermined (Table K). Some of the industrial needs will be served by trunk sewer developments.

The reported industrial and municipal improvements needed for abatement of pollution are noted in Table L. It is noteworthy that about 40 projects listed will be satisfied by the two major trunk sewer projects now under construction or in planning stages.

It is believed that completion of the currently listed needs will substantially remove pollution from wide areas. Additional survey work is needed, however, to locate all sources of pollution and set forth the corresponding treatment needs. The New York State Department of Health has yet to complete many surveys in the drainage areas on Long Island and in the headwaters of the Ramapo and Hackensack Rivers.

Completion of the industrial survey by the Interstate Sanitation Commission is needed to allow evaluation of the effect of industrial discharges and provide for their control.

Control of pollution from the many vessels of all sizes is a problem that needs study to evaluate the effect of such pollution and investigate possible methods of correction. This is necessarily a long range problem, the solution of which may involve changes in vessel design that can only be brought about through normal replacement.

Protection and management of the cleared and forested soils in the upper slopes of the tributary watersheds can contribute materially to the regularity and purity of the surface waters flowing from the catchment areas. Increased low flows thus provided will also improve the quality of water in the streams throughout their courses.

TABLE K

NEW YORK - NEW JERSEY METROPOLITAN AREA

CURRENT STATUS OF INDUSTRIAL* ACTION ON POLLUTION ABATEMENT NEEDS

July 1951

	Status of Action				
Subregions**	Inactive	Active Planning	Final Plans Approved	Under Construction	Undetermined
3. Long Island Sound	-	-	-	-	-
5. Hackensack River	1	9	-	3	1
6. Passaic River	1	3	-	2	1
7. Raritan River	-	10	-	1	-
9. South Shore of Long Island	2	-	-	-	-
TOTALS	4	22	0	6	2

* Industries having separate outlets discharging wastes directly to watercourse.

** Does not include industries in the area of the Interstate Sanitation District.

TABLE L

NEW YORK - NEW JERSEY METROPOLITAN AREA

MUNICIPALITIES* AND INDUSTRIES NEEDING IMPROVEMENTS FOR ABATEMENT OF POLLUTION

July 1, 1951

On the following pages are tabulated the pollution abatement needs as reported by the respective State and interstate agencies. Municipalities are listed alphabetically and the industries are listed under the municipality in which they are located. The list is based upon information readily available and is subject to change as routine field investigations are completed and other information is accumulated. It is admittedly incomplete but is believed to contain most of the significant sources of municipal pollution. Industrial needs are largely undetermined at this time but those whose needs have been determined are included. Most industrial waste discharges, however, will probably be corrected through connections to municipal sewer systems.

The "improvements needed" column is not intended to be literally interpreted. For example, the designation "New Plant" might conceivably be satisfied by other means such as connecting to municipal systems or trunk sewers. The same applies to "replacements" and "additions".

Municipalities and industries desiring detailed information on problems affecting them are referred to their State or interstate water pollution control agencies.

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers or other population centers; sanitary sewage discharged by industry directly to watercourse and industrial wastes discharged into municipal sewerage systems.

TABLE L

NEW YORK - NEW JERSEY METROPOLITAN AREA

MUNICIPALITIES AND INDUSTRIES NEEDING IMPROVEMENTS FOR ABATEMENT OF POLLUTION

July 1, 1951

Name and Location	Population Served	Improvements Needed	Remarks
NEW JERSEY			
(Arlington)			
E.I.du Pont de Nemours and Co.	3,700	New Plant	Active Planning
Bayonne	76,600	New Plant	Final plans approved
(Belle Mead)			
Consumers Farms Milk Coop.	700*	Additions	Under Construction
Bergenfield-Dumont	30,000	Enlargement	Under Construction
Bogota	8,400	Replace plant	To Second Stage of Bergen County Trunk Sewer in 1953
Federal Paper Board Co.	N	New Plant	To Second Stage of Bergen County Trunk Sewer in 1953
Gair, Bogota Corrugated Fibre Box Co.	N	New Plant	To Second Stage of Bergen County Trunk Sewer in 1953
(Bridgewater Twp.)			
Calco Chemical Co.	213,200*	New Plant	Active Planning(a)
(Butler)			
Pequanoc Rubber Co.	300*	Additions	Under Construction
Caldwell	9,900	Enlargement	Inactive
Carteret	13,000	New Plant	Final Plans Approved
(Cedar Grove)			
Taylors Dairy	60*	Connection to municipal sewer system	Active Planning
Cliffside Park	17,000	Enlargement	Final Plans Approved; 50% of population to Bergen County Trunk Sewer in 1951
(East Spotswood)			
P. J.Schweitzer, Inc.	74,300*	Additions	Active Planning(a)

* Population Equivalent

(a) May enter proposed Middlesex County Trunk Sewer

Municipalities in parentheses listed for location purposes only.

N - Not Available

E - Estimated

Name and Location	Population Served	Improvements Needed	Remarks
NEW JERSEY			
Edgewater	4,000	New Plant	Final Plans Approved
Elizabeth (part)	12,500	Connection to municipal sewer system	Active Planning for interceptors to Joint Meeting Plant
Englewood	22,000	Replace Plant	To Bergen County Trunk Sewer in 1951
Englewood Cliffs	900	Replace Plant	50% of population to Bergen County Trunk Sewer in 1951. Remainder to present plant.
Fairview	10,000	Replace Plant	To Bergen County Trunk Sewer in 1951
Bellman's Brook Bleachery	N	New Plant	To Bergen County Trunk Sewer in 1951
(Fords) Heyden Chemical Co.	28,200*	Additions	Active Planning(a)
Fort Lee	11,600	New Plant	50% of population to Bergen County Trunk Sewer in 1951
(Greystone Park) N.J. State Hospital	7,000	Enlargement	Inactive
Guttenberg	5,500	New Plant	Final Plans Approved
Hoboken	50,000	New Plant	Active Planning
Jersey City (N.Y. Bay)	177,000	New Plant	Active Planning
Jersey City (Newark Bay)	118,000	New Plant	Active Planning
Kearney (part)	12,000	Replace Plant	Final Plans Approved
Koppers Co.,Chemical Div.	3,000*	New Plant	Active Planning
Koppers Co.,Gas&Coke Div.	3,600*	New Plant	Active Planning
Koppers Co., Meadows Plant	2,000*	New Plant	Active Planning
Pennsylvania Railroad Yards	125E	Connection to municipal sewer system	Active Planning
Thomas A. Edison, Inc.	80*	Neutralization	Inactive
Leonia	7,000	Replace Plant	To Bergen County Trunk Sewer in 1951

* Population Equivalent
N - Not Available
E - Estimated

(a) May enter proposed Middlesex County Trunk Sewer

Name and Location	Population Served	Improvements Needed	Remarks
New Jersey			
Linden-Roselle Sewerage District	38,000	New Plant	Under Construction
Little Ferry	5,200	Enlargement	To Second Stage of Bergen County Trunk Sewer in 1953
Livingston Twp.	3,900	Enlargement	Under Construction
Thompson & Sons Dairy	N	New Plant	Active Planning
Lyndhurst	20,200	Replace Plant	Active Planning
Kingsland Shops	75E	Connection to municipal sewer system	Active Planning
Madison-Chatham	17,700	Enlargement	Under Construction
Manville	8,300	Enlargement	Active Planning(a)
Johns Manville Inc.	15,000*	Additions	Active Planning
Metuchen	9,800	Enlargement	Active Planning(a)
Middlesex Borough	5,900	Additions	Active Planning(a)
(Montville Twp.) S.B. Penick & Co.	N	New Plant	Undetermined
New Brunswick	39,000	Replace Plant	Active Planning(a)
New Providence	3,200	Enlargement	Final Plans Approved
New Milford	6,000	Enlargement	To Second Stage of Bergen County Trunk Sewer in 1953
North Arlington	15,500	Replace Plant	Active Planning
North Bergen (Hudson)	10,000	New Plant	Active Planning
North Bergen (Bellman's Brook)	15,000	Additions	Active Planning
N.Y.Central Railroad Yards	100E	Connection to municipal sewer system	Active Planning
North Brunswick Twp.	4,500	Replace Plant	Active Planning(a)
(Old Bridge) Anheuser-Busch	63,300*	New Plant	Active Planning(a)
Oradell	3,500	Enlargement	To Second Stage of Bergen County Trunk Sewer in 1953

* Population Equivalent
N - Not Available
E - Estimated

(a) May enter proposed Middlesex County Trunk Sewer

Name and Location	Population Served	Improvements Needed	Remarks
New Jersey			
Palisades Park	9,300	Replace Plant	To Bergen County Trunk Sewer in 1951
(Parlin)			
Dupont Photo Products	16,800*	New Plant	Active Planning(a)
Hercules Powder Co.	19,100*	Additions	Active Planning(a)
Passaic Valley Sewerage District	1,100,000	Enlargement and Additions	Active Planning
Paterson	139,000	New Plant	Inactive
(Perth Amboy)			
Philip Carey Mfg.	13,200*	New Plant	Active Planning
(Piscatawny Twp.)			
Bakelite Corp.	44,000*	Additions	Active Planning(a)
Plainfield Joint Meeting Plant	60,000	Enlargement	Active Planning(a)
(Preakness)			
Preakness Dairy, Inc.	48*	New Plant	Active Planning
Radburn	24,000	Additions	Under Construction
Rahway Valley Joint Meeting Plant	115,000	Additions	Final Plans Approved
Raritan	5,100	Replace Plant	Active Planning(a)
Raritan Twp.-Silver Lake	6,500	Enlargement	Active Planning(a)
Ridgefield	8,000	Replace Plant	To Bergen County Trunk Sewer in 1951
Lowe Paper Co.	N	New Plant	To Bergen County Trunk Sewer in 1951
Ridgefield Park	12,800	Replace Plant	To Bergen County Trunk Sewer in 1951
Continental Paper Co.	N	New Plant	To Bergen County Trunk Sewer in 1951
Ridgewood	17,500	Enlargement	Active Planning
River Edge	9,000	Replace Plant	To Second Stage of Bergen County Trunk Sewer in 1953
Rochelle Park	2,600	Replace Plant	Seeking admission to Passaic Valley Sewerage Commission Trunk Sewers

* Population Equivalent
N - Not Available
E - Estimated

(a) May enter proposed Middlesex County Trunk Sewer

Name and Location	Population Served	Improvements Needed	Remarks
New Jersey			
Rockaway Valley	27,500	Enlargement	Under Construction
(Sayreville Twp.) National Lead Co.	7,800*	New Plant	Active Planning(a)
Secaucus Charles Miller & Co.	11,100 16,000*	Replace Plant Additions	Final Plans Approved
Somerville	11,500	Replace Plant	Active Planning(a)
South Bound Brook	2,900	Additions	Active Planning(a)
South Hackensack	1,300	Replace Plant	To Second Stage of Bergen County Trunk Sewer in 1953
South River	11,300	Enlargement	Active Planning(a)
Teaneck (2 plants on Hackensack)	14,000	Replace Plant	To Bergen County Trunk Sewer in 1951
Teaneck (Plant on Overpeck Creek)	14,000	Replace Plant	To Bergen County Trunk Sewer in 1951
Tenafly	9,500	Enlargement	To Bergen County Trunk Sewer in 1951
West New York Joint Outlet Sewer	111,000	New Plant	Final Plans Approved
(Whippany) Whippany Paper Board Co.	5,000E	Additions	Under Construction
Woodbridge	16,000	New Plant	Final Plans Approved(a)
NEW YORK			
Bedloes Island	500	Additions	Active Planning
(Blue Point) Blue Point Laundry	N	Additions	Inactive
Brewster	6000	Enlargement	Inactive
Carmel San. Dist. #1	1,500	Enlargement	Final Plans Approved
Ellis Island	1,800	New Plant	Active Planning
Glen Cove	15,000	Enlargement	Under Construction
Governors Island	4,500	New Plant	Inactive

* Population Equivalent
N - Not Available
E - Estimated

(a) May enter proposed Middlesex County Trunk Sewer

Name and Location	Population Served	Improvements Needed	Remarks
New York			
Great Neck S.D. Plant #1	6,000	Additions	Inactive
Hempstead (Green Acres)	1,200	Additions	Plant to be abandoned, will connect to Nassau County District #2 Plant
Hoffman Island	50	New Plant	Inactive
Larchmont	63,000	Replace Plant	Final Plans Approved
Long Beach	20,000	Replace Plant	Under Construction
Mamaroneck-Westchester County Mamaroneck Project	40,000	Additions	Inactive
Monroe	400	New Plant	Final Plans Approved
New Rochelle	57,000	Additions	Final Plans Approved
New York City Plants and Sewered Areas -			
Bloomfield Area, S.I.	3,500	New Plant	Active Planning
Bowery Bay Extension	300,000	New Plant	Active Planning
Canal St. Plant	38,000	Additions	Flow to Newtown Creek Plant when completed
Cromwell Ave., S.I.	16,000	Additions	Flow to Oakwood Beach Plant when completed
Dyckman St. Plant	39,000	Additions	Flow to Wards Island Ext. when completed
Fresh Kills Area, S.I.	11,500	New Plant	Active Planning
Hammels Plant	23,000	Replace Plant	Flow to Rockaway Plant when completed
Hunts Point Treatment Plant	675,000	New Plant	Under Construction. Will be completed in 1952.
Newtown Creek Area	1,359,000	New Plant	Active Planning
Neponsit Treatment Plant	900	Replace Plant	Flow to Rockaway Plant when completed
Oakwood Beach, S.I.	7,000	Additions	Active Planning

Name and Location	Population Served	Improvements Needed	Remarks
New York City (cont'd)			
Owls Head Treatment Plant	965,000	New Plant	Under Construction. Will be completed in 1952.
Port Richmond, S.I.	130,000	New Plant	Under Construction
Rockaway	44,000	New Plant	Under Construction. Will be completed in 1952
Red Hook Area	270,000	New Plant	Active Planning
Tallmans'Island Treatment Plant	210,000	Chlorination	Active Planning
Tottenville Area, S.I.	8,700	New Plant	Active Planning
Wards Island Extension	773,000	New Plant	Active Planning
Oyster Bay District	5,500	Enlargement	Inactive
Patchogue	3,400	Replace Plant	Final Plans Approved
Patchogue Plymouth Mills	N	Connect to mun. sewer system	Inactive
Pearl River	5,000	Enlargement	Under Construction
Peekskill	17,000	New Plant	Final Plans Approved
Piermont	1,800	Replace Plant	Inactive
Portchester	24,000	Replace Plant	Final Plans Approved
Port Jefferson District	1,300	Replace Plant	Inactive
Port Washington District	13,000	Replace Plant	Under Construction
(Queens) Fort Totten	1,000	Additions	Final Plans Approved
(Rye) Blind Brook Project - Westchester County Sewerage Commission	9,500	Additions	Inactive
(Sloatsburg) Schwartz Yarn Co. & Ramapo Piece Dye Works	N	Additions	Inactive
(Staten Island) Association for the Poor	400	Additions	Inactive

N - Not Available

Name and Location	Population Served	Improvements Needed	Remarks
Mt. Loretto Home Plant #1	800	Additions	Inactive
St. Josephs Home	300	Additions	Inactive
Spring Valley	4,500	Enlargement	Active Planning
Swinburne Island	50	New Plant	Inactive
Upper Nyack	1,100	New Plant	Active Planning
(Yonkers)			
North Yonkers Plant	86,600	Additions	Inactive
South Yonkers Plant	279,600	Additions	Inactive

BASIC DATA TABLES #1 and #2

This report is based on the data as of July 1951 reported by the cooperating State and interstate water pollution control agencies. These data are listed on the following Basic Data Tables. They are arranged by watershed areas which enables the reader to isolate, for any particular area, the amounts and kinds of pollution being discharged and the adequacy of treatment provided, if any. The principal stream is listed first, starting with the sources of pollution farthest upstream and continuing down to the mouth. Each tributary along with its branches are then covered in downstream order. Those branches which receive no pollution are not listed, while those receiving municipal pollution will be found in Table 1 (Municipal) and similarly, those receiving industrial pollution in Table 2 (Industrial).

The "N" under the columns headed "Population Equivalent" means that the data were not known, not readily available, or not reported. The population equivalent of untreated wastes was not requested to be reported which accounts for many of the "N" entries in this column.

The reader is cautioned not to assume the entries as listed to be final. Changing circumstances require changes in degrees of treatment needed. A plant listed as satisfactory may become unsatisfactory through additional information obtained during surveys; there may be changes in amounts of pollution contributed, or changes in the stream uses, all or any of which may dictate readjustments.

Table 1 applies to municipalities. Included but not listed are those industries discharging wastes into municipal sewers. Table 2 applies only to industries discharging wastes directly to watercourses. Industries located in the Interstate Sanitation District are not included but are summarized elsewhere (Appendix C).

To aid in finding the location of the various sources of pollution, a stream code and river mileage system has been devised. Each of the pollution points on any stream is listed in downstream order beneath the name of that stream, accompanied by its distance in river miles from the mouth of the stream. Tributary streams are further identified by a symbol indicating the stream to which they are tributary and a mileage number indicating in river miles the point at which they join the larger stream. With this information any source of pollution may be located with respect to the mouth of the main stream of the basin.

Example: To locate the outfall of Leonia, New Jersey, listed in Table I. It is found that Leonia, New Jersey contributes pollution to Overpeck Creek at a point 1.4 miles from its mouth. Overpeck Creek (Ha - 13.8) enters the Hackensack River at a point 13.8 miles from its mouth. The Hackensack River (N - 4.7) flows into Newark Bay at a point 4.7 miles from its mouth. Newark Bay (K - 3.5) in turn joins Kill Van Kull 3.5 miles from the mouth of the Kull. And finally Kill Van Kull (U - 3.0) enters Upper New York Bay 3.0 miles above Fort Hamilton, which is the zero point for that river system adopted for this report.

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
HUDSON RIVER									
Palisades Interstate Park - Bear Mt., N.Y.	46.7	16,000	N	Primary	Sat.	Undet.	N	None	Completed in 1951
Naval Ammo Depot - Iona Island, N.Y.	45.7	400	N	Primary	Sat.	Sat.	N	None	
Peekskill, N.Y.	43.6	17,000	N	Chlorination	-	-	N	New Plant	Final Plans Approved
Vet. Adm.Hospital, Montrose, N.Y.	39.2	2,500	N	Primary	Sat.	Undet.	N	None	Completed in 1950
N.Y. State Rehabilitation Hosp., West Haverstraw, N.Y.	38.4	300	N	Primary	Sat.	Sat.	N	None	
Haverstraw, N.Y.	37.1	5,800	N	Primary	Sat.	Sat.	N	None	
Croton-on-Hudson,N.Y.	35.0	4,800	N	Primary	Sat.	Sat.	N	None	Completed in 1951
Water St. Plant, Ossining, N.Y.	33.3	14,000	N	Primary	Sat.	Sat.	N	None	
Liberty St. Plant, Ossining, N.Y.	33.3	1,500	N	Primary	Sat.	Sat.	N	None	
Sing Sing, Ossining, N.Y.	32.4	2,200	N	Primary	Sat.	Sat.	N	None	

* Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers or other population centers.

** Includes industrial wastes discharged into municipal sewerage systems.

N - Not Known   A - Based on actual measurement of BOD   E - Estimated   S - Summer   W - Winter

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes	Waste Treatment Provided	Adequacy of Treatment Facilities Cap'y.	Adequacy of Treatment Facilities Opr.	P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
HUDSON RIVER (Cont.)									
Briarcliff Manor, Scarborough, N.Y.	30.0	1,000	N	Primary	Sat.	Sat.	N	None	
Briarcliff Manor, River Road, N.Y.	30.0	100	N	Primary	Sat.	Sat.	N	None	Additions completed in 1951
North Tarrytown, N.Y.	28.6	8,800	N	Primary	Sat.	Sat.	N	None	
Upper Nyack, N.Y.	28.8	1,100	N	None	-	-	N	New Plant	
Nyack, N.Y.	28.6	5,800	N	Primary	Sat.	Sat.	N	None	Active Planning
South Nyack, N.Y.	27.8	3,000	N	Primary	Sat.	Sat.	N	None	
Tarrytown, N.Y.	27.8	8,800	N	Primary	Sat.	Sat.	N	None	
Jewish Convalescent Home, Grand-View, N.Y.	26.7	50	N	Primary	Sat.	Sat.	N	None	
Shanks Village, Orangeburg, N.Y.	25.4	5,000	N	Primary	Sat.	Sat.	N	None	To be included in Orangetown Sewer District #2
Piermont, N.Y.	25.0	1,800	N	Primary	Unsat.	Sat.	N	Replacement	Inactive
Irvington, N.Y.	25.0	3,600	N	Primary	Sat.	Undet.	N	None	Completed in 1950
North Yonkers Project, Yonkers, N.Y.	18.5	86,600	N	Minor(a)	Unsat.	Undet.	N	Addition	Inactive
Westchester County Plant of S. Yonkers, N.Y.	18.0	279,600	N	Minor(a)	Unsat.	Undet.	N	Addition	Inactive

(a) Indicates screening and/or comminution.

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
HUDSON RIVER (Cont.)									
Englewood Cliffs, N.J.	13.3	900	N	Primary	Unsat.	Sat.	N	Replacement	Active Planning(b)
Dyckman St. Plant, NYC	12.7	39,000	N	Minor(a)	Unsat.	Undet.	N	Addition	Active Planning
Fort Lee, N.J.	11.2	11,600	N	None	-	-	N	New Plant	Final Plans Approved(b)
Edgewater, N.J.	8.9	4,000	N	None	-	-	N	New Plant	Final Plans Approved
Cliffside Park, N.J.	8.5	17,000	N	Primary	Unsat.	Unsat.	N	Enlargement	Final Plans Approved(b)
North Bergen, N.J.	6.7	10,000	N	None	-	-	N	New Plant	Active Planning
Guttenberg, N.J.	6.1	5,500	N	None	-	-	N	New Plant	Final Plans Approved
Manhattan - West Side	-	734,000	N	None	(See East River-Wards Island Ext.)				
Joint Outlet Sewer, West New York, N.J.	5.2	111,000	N	None	-	-	N	New Plant	Final Plans Approved
Hoboken, N.J.	2.0	50,000	N	None	-	-	N	New Plant	Active Planning
Canal St. Plant, NYC	1.5	38,000	N	Minor(a)	Unsat.	Unsat.	N	Addition	Active Planning
Manhattan - South end	-	-	N	None	(See East River - Newtown Creek)				
ANNSVILLE CREEK H-43.8									
Camp Smith, N.Y.	0.5	2,500	N	Primary	Sat.	Sat.	N	None	
CEDAR POND BROOK H-39.5									
Palisades Interstate Park - Lake Tiorati, N.Y.	7.5	1,200	N	Secondary	Sat.	Sat.	N	None	

(b) About 50% of population connecting to Bergen County Trunk Sewer in 1951 (Hackensack River Basin).

H - Hudson River
M - Minisceongo Creek (H-39.4)
Mu- Muscoot River (C-22)
C - Croton River (H-33.7)

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
MINISCEONGO CREEK H-39.4									
Letchworth Village, Thiells, N.Y.	6.5	6,000	N	Primary	Sat.	Sat.	N	None	
W. Haverstraw, N.Y.	3.0	3,000	N	Primary	Sat.	Sat.	N	None	
BEAVER POND BROOK M-9.5									
Palisades Interstate Park, Beaver Pond, N.Y.	2.0	1,300	N	Secondary	Sat.	Sat.	N	None	
CROTON RIVER H-33.7									
Brewster, N.Y.	24.0	600	N	Secondary	Unsat.	Undet.	N	Enlargement	Inactive
MUD POND Mu-4.0									
Carmel SD #1, N.Y.	0.1	W-700 S-1500	N	Secondary	Unsat.	Undet.	N	Enlargement & Addition	Final Plans Approved
POCANTICO RIVER H-28.7									
Briarcliff Manor, Pocantico Plant, N.Y.	5.0	1,400	N	Secondary	Undet.	Undet.	N	Undet'd.	
SPARKILL CREEK H-24.8									
Rockland State Hospital, N.Y.	5.5	6,700	N	Secondary	Sat.	Sat.	N	None	

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
SPARKILL CREEK (Cont.)									
St. Dominics School, Blauvelt, N.Y.	5.5	750	N	Secondary	Sat.	Sat.	N	None	
St. Agnes Convent, Sparkill, N.Y.	4.0	600	N	Secondary	Sat.	Sat.	N	None	
German Masonic Home, Tappan, N.Y.	3.0	100	N	Secondary	Sat.	Sat.	N	None	
UPPER BAY									
Jersey City (Part), N.J.	7.0	177,000	N	None	-	-	N	New Plant	Active Planning
Ellis Island	6.0	1,800	N	None	-	-	N	New Plant	Active Planning
Governors Island	5.5	4,500	N	None	-	-	5,000-E	New Plant	Inactive
Bedloes Island	5.5	500	N	Primary	Unsat.	Undet.	N	Additions	Active Planning
Red Hook Area, Bklyn, NYC	5.0	270,000	N	None	-	-	N	New Plant	Active Planning
Passaic Valley Sewerage District, N.J.	3.5	1,100,000	N	Primary	Unsat.	Sat.	N	Enlargement & Addition	Active Planning
Naval Supply Depot Bayonne, N.J.	3.5	2,000	N	Primary	Sat.	Sat.	N	None	
N.Y. Port of Embarkation, Bklyn., N.Y.C.	3.1	2,700	N	None	-	-	2,700-E	Undet.	
Owls Head, Bklyn., N.Y.C.	3.0	965,000	N	None	-	-	N	New Plant	Under Construction

U - Upper Bay
K - Kill Van Kull (U-3.0)
Ha - Hackensack River (N-4.7)

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities Cap'y.	Adequacy of Treatment Facilities Opr.	P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
KILL VAN KULL U-3.0									
Port Richmond Area, Staten Is., N.Y.C.	2.8	130,000	N	None	-	-	N	New Plant	Under Construction
Bayonne, N.J.	1.7	76,600	N	None	-	-	N	New Plant	Final Plans Approved
NEWARK BAY K-3.5									
Jersey City (Part,) N.J.	3.0	118,000	N	None	-	-	N	New Plant	Active Planning
HACKENSACK RIVER									
Pearl River, N.Y.	30.0	5,000	(c) 30,000	Secondary	Unsat.	Sat.	N	Enlargement	Under Construction
Oradell, N.J.	20.3	3,500	N	Secondary	Unsat.	Sat.	N	Enlargement	Active Planning
River Edge, N.J.	19.5	9,000	N	Secondary	Unsat.	Sat.	N	Replacement	Active Planning
New Milford, N.J.	18.5	6,000	N	Secondary	Unsat.	Sat.	N	Enlargement	Active Planning
Teaneck, N.J.	17.9	7,000	N	Primary	Unsat.	Sat.	N	Replacement	Active Planning
Maywood, N.J.	17.8	8,000	N	Secondary	Sat.	Sat.	N	None	
Teaneck, N.J.	16.8	7,000	N	Primary	Unsat.	Sat.	N	Replacement	Active Planning
Hackensack, N.J.	16.0	30,000	N	Secondary	Sat.	Sat.	N	None	
Bogota, N.J.	15.7	8,400	N	Primary	Unsat.	Sat.	N	Replacement	Active Planning
S. Hackensack, N.J.	14.7	1,300	N	Primary	Unsat.	Sat.	N	Replacement	Active Planning
Little Ferry, N.J.	13.1	5,200	N	Secondary	Unsat.	Unsat.	N	Enlargement	Active Planning
Hackensack Valley District Treatment Plant, N.J.	13.0	(120,000E)	See Note (d)						

(c) Includes pre-treated industrial wastes from Lederle Laboratories.
(d) Plant under construction. Will be in operation in 1951 and will treat wastes from Bergen County Trunk Sewer.

Ha - Hackensack River (N-4.7)
D - Dwarskill Creek (Ha-23.8)
Tenaskill Brock - D-1.0

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
HACKENSACK RIVER (Cont.)									
Secaucus, N.J.	9.0	11,100	N	Primary	Unsat.	Unsat.	N	Replacement	Final Plans Approved
Hudson County Mental Hosp., N.J.	8.0	1,900	N	Secondary	Undet.	Undet.	N	Undet.	
Laurel Hill Institutions, N.J.	5.7	1,100	N	None	-	-	N	Undet.	
South Kearny, N.J.	5.5	12,000E	N	Minor (a)	Unsat.	Unsat.	N	Replacement	Final Plans Approved
PASCACK BROOK Ha-24.2									
Spring Valley, N.Y.	12.0	4,500	N	Secondary	Unsat.	Undet.	N	Enlargement	Active Planning
Westwood, N.J.	1.7	6,700	N	Secondary	Sat.	Sat.	N	None	
TENASKILL BROOK D-1.0									
Tenafly, N.J.	3.1	9,500	N	Secondary	Unsat.	Sat.	N	Enlargement	Under Construction(e)
MILL POND Ha-20.6									
Bergenfield, Dumont, N.J.	1.3	30,000	N	Secondary	Unsat.	Sat.	N	Enlargement	Under Construction
OVERPECK CREEK Ha-13.8									
Englewood, N.J.	2.6	22,000	N	Primary	Unsat.	Unsat.	N	Replacement	Under Construction(e)
Teaneck, N.J.	2.4	14,000	N	Primary	Unsat.	Sat.	N	Replacement	Under Construction(e)
Leonia, N.J.	1.4	7,000	N	Primary	Unsat.	Unsat.	N	Replacement	Under Construction(e)
Palisades Park, N.J.	1.1	9,300	N	Primary	Unsat.	Unsat.	N	Replacement	Under Construction(e)
Ridgefield Park, N.J.	0.8	12,800	N	Primary	Unsat.	Unsat.	N	Replacement	Under Construction(e)

(e) Connecting to Bergen County Trunk Sewer in 1951.

Ha - Hackensack River (N-4.7)
N - Newark Bay

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
OVERPECK CREEK (Cont.)									
Ridgefield, N.J.	0.5	8,000	N	Primary	Unsat.	Unsat.	N	Replacement	Under Construction (e)
BELLMAN'S BROOK Ha-11.8									
Fairview, N.J.	2.0	10,000	N	Primary	Unsat.	Sat.	N	Replacement	Under Construction (e)
North Bergen, N.J.	1.5	15,000E	N	Primary	Unsat.	Sat.	N	Addition	Active Planning
CROMAKILL CREEK Ha-9.0									
North Bergen, N.J.	3.0	3,000E	N	Primary	Undet.	Undet.	N	Undetermined	
BERRY'S CREEK Ha-8.8									
Hasbrook Heights, N.J.	6.0	9,000	N	Secondary	Sat.	Sat.	N	None	
Wood Ridge, N.J.	4.2	6,500	N	Secondary	Sat.	Sat.	N	None	
Rutherford, East Rutherford and Carlstadt, N.J.	2.8	32,100	N	Secondary	Sat.	Sat.	N	None	
KINGSLAND CREEK Ha-6.6									
Lyndhurst, N.J.	0.7	20,200	N	Primary	Unsat.	Sat.	N	Replacement	Active Planning
North Arlington, N.J.	0.5	15,500	N	Primary	Unsat.	Sat.	N	Replacement	Active Planning
PASSAIC RIVER N-4.7									
Stirling, N.J.	63.0	1,300	N	Secondary	Sat.	Sat.	N	None	

(e) Connecting to Bergen County Trunk Sewer in 1951

P - Passaic River (N-4.7)
R - Rockaway River (P-42.5)

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
PASSAIC RIVER (Cont.)									
New Providence, N.J.	57.0	3,200	N	Secondary	Unsat.	Sat.	300-A	Enlargement	Final Plans Appr'd.
Madison-Chatham, N.J.	51.0	17,700	N	Secondary	Unsat.	Sat.	400-E	Enlargement	Under Construction
Livingston Twp., N.J.	48.0	3,900	N	Secondary	Unsat.	Sat.	30-A	Enlargement	Under Construction
Caldwell, N.J.	31.0	9,900	N	Secondary	Unsat.	Sat.	3000-A	Enlargement	Inactive
West Paterson, N.J.	27.0	3,900	N	Secondary	Sat.	Sat.	600-A	None	
Totowa, N.J.	27.0	6,000	N	Secondary	Sat.	Sat.	700-A	None	
Paterson, N.J.	17.5-25.0	139,000	N	None	-	-		New Plant	Inactive
DEAD RIVER P-64.9									
U.S. Vet Hospital, Somerset Hills, N.J.	3.0	200	N	Secondary	Sat.	Sat.	N	None	
CALDWELL BROOK P-42.9									
Essex Fells, N.J.	2.0	1,600	N	Secondary	Sat.	Sat.	60-A	None	
ROCKAWAY RIVER P-42.5									
Rockaway Valley, N.J.	6.0	27,500	N	Secondary	Unsat.	Sat.	3200-A	Enlargement	Under Construction
GREEN POND BROOK R-18.6									
Picatinny Arsenal Dover, N.J.	6.9	3,000	N	Secondary	Sat.	Sat.	200-E	None	

R - Rockaway River (P-42.5)
W - Whippany River (R-0.7)
P - Passaic River
Po- Pompton River (P-31.8)

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Capy.	Opr.			
WHIPPANY RIVER R-0.7									
N.J. State Hosp. Greystone Park, N.J.	14.5	7,000	N	Secondary	Unsat.	Sat.	N	Enlargement	Inactive
Morristown, N.J.	9.5	17,000	N	Secondary	Sat.	Sat.	1,600-A	None	
BLACK BROOK W-4.0									
St. Elizabeth's College, Convent Sta., N.J.	2.8	1,500	N	Secondary	Sat.	Sat.	400-A	None	
POMPTON RIVER P-31.8									
Packanack Lake, Wayne Twp., N.J.	3.4	2,600	N	Secondary	Sat.	Sat.	500-A	None	
RAMAPO RIVER Po-6.5									
Monroe, N.Y.	31.0	400	N	None	-	-	N	New Plant	Final Plans Approved
Tuxedo, N.Y.	20.5	2,400	N	Secondary	Sat.	Sat.	N	None	
Tuxedo Park, N.Y.	19.5	1,200	N	Secondary	Sat.	Sat.	N	None	
Suffern, N.Y.	13.0	3,800	N	Primary	Sat.	Sat.	N	None	
LAKE COHASSET OUTLET Ra-26.0									
Palisades Interstate Park, Lake Cohasset, N.Y.	2.2	1,200	N	Secondary	Sat.	Sat.	N	None	

Ra - Ramapo River (Po-6.5)
Po - Pompton River (P-31.8)
Wa - Wanaque River (Po-6.5)
P - Passaic River

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Month	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
LAKE STAHAHE BROOK Ra-25.0									
Palisades Interstate Park, Lake Stahahe, N.Y.	0.5	1,200	N	Secondary	Sat.	Sat.	N	None	
STONY BROOK Ra-17.5									
Palisades Interstate Park, Lake Sebago, N.Y.	4.5	1,200	N	Secondary	Sat.	Sat.	N	None	Completed in 1951
WANAQUE RIVER Po-6.5									
Wanaque, N.J.	4.6	500	N	Secondary	Sat.	Sat.	20-A	None	
E.I. duPont Village, N.J.	1.1	400	N	Secondary	Sat.	Sat.	40-E	None	
PEQUANNOCK RIVER Wa-1.3									
Butler-Bloomingdale, N.J.	3.5	5,900	N	Secondary	Sat.	Sat.	300-A	None	
PECKMAN CREEK P-26.6									
Verona, N.J.	5.0	11,000	N	Secondary	Sat.	Sat.	3100-E	None	
Essex County Insts.,N.J.	3.8	3,900	N	Secondary	Sat.	Sat.	2200-A	None	
Cedar Grove, N.J.	2.2	4,000	N	Secondary	Sat.	Sat.	N	None	Completed in 1951
Little Falls, N.J.	0.9	5,400	N	Secondary	Undet.	Sat.	600-E	Undet.	
SADDLE RIVER P-15.0									
Radburn-Fairlawn, N.J.	6.9	24,000	N	Secondary	Unsat.	Sat.	N	Addition	Under Construction

P - Passaic River
S - Saddle River (P-15.0)
* Zero point, Fort Hamilton-
Fort Wadsworth

TABLE 1

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BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
SADDLE RIVER (Cont.)									
Rochelle Park, N.J.	3.5	2,600	N	Secondary	Unsat.	Sat.	N	Replacement	Active Planning
HOHOKUS BROOK S-7.5									
Ridgewood, N.J.	0.1	17,500	N	Secondary	Unsat.	Sat.	N	Enlargement	Active Planning
SPROUT BROOK S-4.0									
Bergen Pines County Hospital, Paramus, N.J.	3.7	200	N	Secondary	Undet.	Undet.	N	Undetermined	
LOWER N.Y. & RARITAN BAY, NORTH WEST SHORE*									
Cromwell Ave., S.I.,N.Y.	2.2	16,000	N	Minor (a)	Unsat.	Sat.	N	Addition	Active Planning
Hoffman Island, Lower Bay	1.9	50	N	None	-	-	N	New Plant	Inactive
Swinburne Island, Lower Bay	2.7	50	N	None	-	-	N	New Plant	Inactive
Miller Field, S.I.,N.Y.	3.6	300	N	None	-	-	N	Undet.	
Oakwood Beach, S.I.,N.Y.	5.0	7,000	N	Minor (a)	Unsat.	Undet.	N	Addition	Active Planning
Association for the Poor, S.I.,N.Y.	7.0	400	N	Primary	Unsat.	Undet.	N	Addition	Inactive
St. Josephs Home, S.I.,NY	9.0	300	N	Primary	Unsat.	Undet.	N	Addition	Inactive
Richmond Memorial Hospital, S.I.,N.Y.	10.0	250	N	Primary	Sat.	Unsat.	N	None	
Mt. Loretto Home, Plant #1, S.I., N.Y.	11.3	800	N	Primary	Unsat.	Sat.	N	Addition	Inactive

*Zero point, mouth of Raritan River

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
LOWER N.Y. & RARITAN BAY, NORTH WEST SHORE (Cont.)									
Mt. Loretto Home, Plant #2, S.I., N.Y.	11.3	350	N	Primary	Sat.	Sat.	N	None	
LOWER BAY, RARITAN BAY SOUTH SHORE, SANDY HOOK BAY*									
Fort Hancock, Sandy Hook, N.J.	13.5	100	N	Primary	Undet.	Undet.	N	Undet.	
Highlands, N.J.	15.5	2,900	N	Primary	Sat.	Sat.	N	None	
Atlantic Highlands, N.J.	13.0	3,100	N	Primary	Sat.	Sat.	N	None	
Naval Ammunition Depot, Earle, N.J.	11.0	450	N	Primary	Sat.	Sat.	N	None	
Keansburg, N.J.	8.0	5,600	N	Intermediate	Sat.	Undet.	N	None	Completed in 1950
Keyport, N.J.	5.0	5,900	N	Primary	Sat.	Sat.	N	None	
Sayreville, Morgan Hts. Section, N.J.	2.5	2,000	N	Primary	Sat.	Sat.	N	None	Completed in 1951
Sayreville, Melrose Section, N.J.	1.5	900	N	Primary	Sat.	Sat.	30	None	
RARITAN RIVER									
Raritan, N.J.	25.1	5,100	N	Secondary	Unsat.	Sat.	5,200-A	Replacement	Active Planning(f)
Somerville, N.J.	24.5	11,500	N	Secondary	Unsat.	Sat.	13,000-A	Replacement	Active Planning(f)

(f) May enter proposed Middlesex Valley Trunk Sewer

Nb- North Branch Raritan River (Rar-30.1)
Rar - Raritan River

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities Cap'y.	Adequacy of Treatment Facilities Opr.	P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
RARITAN RIVER (Cont.)									
Manville, N.J.	21.2	8,300	N	Secondary	Unsat.	Sat.	500-A	Enlargement	Active Planning(f)
Bound Brook, N.J.	18.3	8,300	N	Intermed.	Sat.	Sat.	9,300-A	None	
S. Bound Brook, N.J.	18.2	2,900	N	Primary	Unsat,	Sat.	1,700-A	Addition	Active Planning(f)
Middlesex Borough,N.J.	18.2	5,900	N	Intermed.	Unsat.	Sat.	21,600-A	Addition	Active Planning(f)
Rutgers U., University Heights, N.J.	14.3	150	N	Secondary	Sat.	Sat.	50-A	None	(f)
New Brunswick,N.J.	12.6	39,000	N	Intermed.	Unsat.	Sat.	122,000-A	Replacement	Active Planning(f)
Highland Park, N.J.	11.5	9,700	N	Primary	Sat.	Sat.	6,150-A	None	(f)
Perth Amboy, N.J.	0.4	41,300	N	Secondary	Sat.	Sat.	29,000-A	None	(f)
South Amboy, N.J.	0.0	8,400	N	Primary	Sat.	Sat.	7,500-A	None	(f)
MINE BROOK Nb-11.2									
Bernardsville, N.J.	6.0	3,900	N	Secondary	Sat.	Sat.	N	None	
Far Hills, N.J.	0.1	600	N	Primary	Unsat.	Sat.	N	Undetermined	
SOUTH BRANCH Rar-30.1									
Flemington, N.J.	11.5	3,000	N	Secondary	Sat.	Sat.	250-A	None	
MILLSTONE RIVER Rar-20.7									
Princeton, N.J.	15.5	12,000	N	Secondary	Sat.	Sat.	250-A	None	
St. Josephs School Kingston, N.J.	15.3	150	N	Secondary	Sat.	Sat.	40	None	

(f) May enter proposed Middlesex Valley Trunk Sewer

Mi - Millstone River (Rar-20.7)
Rar - Raritan River
B - Beden's Brook - (Mi-11.6)

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
ROCKY BROOK Mi-24.0									
Hightstown, N.J.	1.2	3,700	N	Secondary	Sat.	Sat.	800-A	None	
DEVILS BROOK Mi-16.6									
James A. Forrestal Research Lab., Princeton,U., N.J.	2.0	50E	N	Secondary	Sat.	Sat.	N	None	
BEDEN'S BROOK Mi-11.6									
St. Michaels Orphanage, Hopewell, N.J.	10.2	250	N	Secondary	Sat.	Sat.	N	None	
ROCK BROOK B-3.6									
State Village for Epileptics, Skillman,N.J.	0.6	1,800	N	Secondary	Sat.	Sat.	100-E	None	
PIKE BROOK Mi-0.4									
Belle Mead General Depot, Belle Mead, N.J.	7.0	1,700	N	Secondary	Sat.	Sat.	100-E	None	
GREEN BROOK Rar-18.2									
Union Co. T.B. San. Scotch Plains, N.J.	12.0	550	N	Secondary	Sat.	Sat.	480-A	None	

G - Green Brook (Rar-18.2)
Bo - Bound Brook (G-2.5)
Rar- Raritan River

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
BOUND BROOK G-2.5									
Plainfield Joint Meeting Plant, N.J.	0.1	60,000	N	Secondary	Unsat.	Sat.	10,300-A	Enlargement	Active Planning(f)
DISMAL SWAMP BROOK Bo-4.6									
Metuchen, N.J.	3.5	9,800	N	Secondary	Unsat.	Sat.	3,200-A	Enlargement	Active Planning(f)
MILE RUN Rar-14.3									
N. Brunswick Twp., N.J.	2.5	4,500	N	Secondary	Unsat.	Unsat.	2,900-A	Replacement	Active Planning(f)
TRIBUTARY TO RARITAN Rar-14.0									
Camp Kilmer, N.J.	1.0	N	N	Secondary	Sat.	Sat.	N	None	
MILL BROOK Rar-10.1									
Raritan Twp., Silver Lake Section, N.J.	0.2	6,500	N	Primary	Unsat.	Sat.	7,600-A	Enlargement	Active Planning(f)
SOUTH RIVER Rar-6.8									
Sayreville, N.J.	1.5	6,000	N	Secondary	Sat.	Sat.	1,300-A	None	(f)
South River, N.J.	1.5	11,300	N	Secondary	Unsat.	Sat.	8,800-A	Enlargement	Active Planning(f)
TRIBUTARY TO RARITAN Rar-3.5									
Raritan Twp., Clara Barton Section, N.J.	1.5	3,000	N	Primary	Sat.	Sat.	1,800-A	None	(f)

(f) May enter proposed Middlesex Valley Trunk Sewer

Rar - Raritan River
A - Arthur Kill

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
KINSEY'S CREEK Rar-3.0									
Woodbridge Twp., N.J.	0.3	9,000	N	Secondary	Sat.	Sat.	3000-A	None	(f)
ARTHUR KILL TO RARITAN BAY									
Elizabeth, N.J.	12.0	12,500	N	None	-	-	N	Connection to municipal sewer system	Active Planning for interceptor to joint meeting plant
Joint Meeting, Elizabeth, N.J.	11.8	330,700	N	Primary	Sat.	Sat.	N	None	
Linden-Roselle Sewerage Dist., N.J.	10.0	38,000	N	None	-	-	235,000-A	New Plant	Under Construction
Bloomfield Area, S.I., N.Y.	9.5	3,500	N	None	-	-	N	New Plant	Active Planning
Carteret, N.J.	8.0	13,000	N	None	-	-	N	New Plant	Final Plans Appr'd.
Fresh Kills Area, S.I., N.Y.	7.0	11,500	N	None	-	-	N	New Plant	Active Planning
Carteret Sub-Depot, Carteret, N.J.	5.0	400	N	Primary	Sat.	Sat.	N	None	
Tottenville Area, S.I., N.Y.	0.5	8,700	N	None	-	-	N	New Plant	Active Planning
RAHWAY RIVER A-8.2									
Rahway Valley Joint Meeting Plant, N.J.	3.5	115,000	N	Primary	Unsat.	Sat.	N	Addition	Final Plans Appr'd.

(f) May enter proposed Middlesex Valley Trunk Sewer

A - Arthur Kill

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities Cap'y.	Adequacy of Treatment Facilities Opr.	P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
FRESH KILLS A-7.0									
Halloran Gen. Hosp., S.I., N.Y.	4.0	5,000	N	Primary	Sat.	Sat.	N	None	
WOODBRIDGE CREEK A-4.0									
Woodbridge, N.J.	0.5	16,000	N	None	-	-		New Plant	Final Plans Appr'd.
LONG ISLAND SOUTH SHORE									
Jones Beach State Park, N.Y.		10,000	N	Secondary	Sat.	Sat.	N	None	Completed in 1951
ROCKAWAY INLET									
Coney Island Plant, N.Y.		463,000	430,000-A	Intermed.	Sat.	Sat.	135,000(S)-A(g) 191,000(W)-A	None	
Fort Tilden, N.Y.		300	N	Primary	Sat.	Sat.	300	None	
JAMAICA BAY									
Floyd Bennett Field, Bklyn., N.Y.		4,000	N	Secondary	Sat.	Sat.	N	None	
26th Ward Plant, Bklyn, N.Y.		400,000	247,000-A	Secondary	Sat.	Sat.	139,000-A(h)	None	Additions completed in 1950

(g) Provides intermediate treatment July-September

(h) Discharge when functioning as primary plant. Started secondary treatment April, 1950.

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JAMAICA BAY (Cont.)									
Jamaica Plant, Queens, N.Y.		460,000	317,000-A	Secondary	Sat.	Sat.	70,000-A	None	
Hempstead (Green Acres) N.Y.		1,200	N	Primary	Unsat.	Sat.	N	Additions	Final plans Appr'd. Will be abandoned & connected to Nassau County District #2 Plant
Cedarhurst, N.Y.		6,000	N	Primary	Sat.	Sat.	N	None	
Hammels Plant, Rockaway, N.Y.		23,000	N	Minor$^{(a)}$	Unsat.	Sat.	N	Replacement	Final Plans Approved (j)
Rockaway Area, N.Y.		20,000	N	None	-	-	N	New Plant	Under Construction
Neponset Plant, Rockaway, N.Y.		900	N	Primary	Unsat.	Sat.	N	Replacement	Final Plans Approved (j)
BANNISTER CREEK									
Lawrence, N.Y.		3,000	N	Primary	Sat.	Sat.	N	None	
ROCKAWAY CHANNEL									
Atlantic Beach, N.Y.		5,000	N	Secondary	Sat.	Sat.	N	None	Completed in 1951
BROAD CHANNEL									
Nassau County Dist. #2, N.Y.		80,000(i)	N	Secondary	Sat.	Undet.	N	None	Secondary Treatment Completed in 1951

(i) Population to be served when plant is in operation

(j) To be replaced by the new Rockaway Plant now under construction.

TABLE 1

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BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

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REYNOLDS CHANNEL									
Long Beach-New York Ave., N.Y.		20,000-W 80,000-S	N	Primary	Unsat.	Sat.	N	Replacement	Under Construction
Long Beach - Lido Beach, N.Y.		2,000	N	Primary	Sat.	Sat.	N-	None	
PARSONAGE CREEK									
Rockville Centre, N.Y.		22,000	N	Secondary	Sat.	Sat.	N	None	To be abandoned & Connected to Nassau County District #2 Plant
FREEPORT CREEK									
Freeport, N.Y.		14,000	N	Intermediate	Sat.	Sat.	N	None	
GREAT SOUTH BAY									
Ocean Beach, N.Y.		5,500	N	Primary	Sat.	Sat.	N	None	
PATCHOGUE RIVER									
Patchogue, N.Y.		3,400	N	Primary	Unsat.	Unsat.	N	Replacement	Final Plans Approved
EAST RIVER									
Newtown Creek Area, N.Y.		1,359,000(k)	N	None	-	-	N	New Plant	Active Planning
Wards Island Treatment Plant, N.Y.		1,406,000	1,300,000	Secondary	Sat.	Sat.	250,000	None	

(k) A small part of this served population located at the southern end of Manhattan Island now discharges to the Hudson River. This area and the Canal Street plant will be intercepted and pumped to Newtown Creek.

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					Cap'y.	Opr.			
EAST RIVER (Cont.)									
Wards Island Extension, N.Y.		(1)	N	None	-	-	N	New Plant	Active Planning
Bowery Bay Treatment Plant, N.Y.		360,000	283,000A	Secondary	Sat.	Sat.	91,000-A	None	
Bowery Bay Extension, N.Y.		300,000	N	None	-	-	N	New Plant	Active Planning
Hunts Point Treatment Plant, N.Y.		675,000	N	None	-	-	N	New Plant	Under Construction
Tallmans Island Treatment Plant, N.Y.		210,000	152,000A	Secondary	Sat.	Sat.	16,000-A	Chlorination	Active Planning
LONG ISLAND - NORTH SHORE									
Bayside Gables, Queens, N.Y.		100E	N	Primary	Sat.	Sat.	N	None	
Fort Totten, Queens, N.Y.		1,000	N	Secondary	Unsat.	Sat.	N	Addition	Final Plans Approved
Morgan Estates, Glen Cove, N.Y.		100E	N	Primary	Sat.	Sat.	N	None	
LITTLE NECK BAY									
Belgrave Sewer District, N.Y.		12,000	N	Intermed.	Sat.	Sat.	N	None	
Great Neck Sewer Dist., Plant #2, N.Y.		5,000	N	Primary	Sat.	Sat.	N	None	Additions completed in 1950

(1) A sewered population of about 734,000 now discharging untreated to the Hudson River from the west side of Manhattan and the Bronx. Interceptors will bring the sewage to the Wards Island Plant from this area and the area served by the Dyckman Street Plant.

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July 1951

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					Cap'y.	Opr.			
MANHASSET BAY									
Great Neck Village, N.Y.		7,900	N	Secondary	Sat.	Sat.	N	None	
Great Neck Sewer Dist.#1,N.Y.		6,000	N	Primary	Unsat.	Unsat.	N	Addition	Inactive
Port Washington Sewer District, N.Y.		13,000	N	Primary	Unsat.	Unsat.	N	Replacement	Under Construction
HEMPSTEAD HARBOR									
Roslyn, N.Y.		1,200	N	Secondary	Sat.	Sat.	N	None	Completed in 1951
Glen Cove, N.Y.		15,000	N	Primary	Unsat.	Sat.	N	Enlargement	Under Construction
OYSTER BAY									
Oyster Bay District, N.Y.		5,500	N	Primary	Unsat.	Sat.	N	Enlargement	Inactive
HUNTINGTON BAY									
Huntington District, N.Y.		8,000	N	Primary	Sat.	Sat.	N	None	
NORTHPORT BAY									
Northport, N.Y.		1,200	N	Primary	Sat.	Sat.	N	None	
NISSEQUOGUE RIVER TO SMITHTOWN BAY									
Kings Park State Hosp., N.Y.	0.5	6,200	N	Secondary	Sat.	Sat.	N	None	

TABLE 1

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF MUNICIPAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E. (B.O.D.) Untr't. Wastes**	Waste Treatment Provided	Adequacy of Treatment Facilities		P.E. (B.O.D.) Discharged to Watercourse	Treatment Needs	Current Status Municipal Action
					Cap'y.	Opr.			
PORT JEFFERSON HARBOR									
Port Jefferson Dist., N.Y.		1,300	N	Primary	Unsat.	Unsat.	N	Replacement	Inactive
GARDNERS BAY									
Greenport, N.Y.		3,000	N	Primary	Undet.	Undet.	N	Undetermined	
SHELTER ISLAND SOUND									
Shelter Island Heights, N.Y.		1,300	N	Primary	Sat.	Sat.	N	None	
PECONIC RIVER									
Brookhaven National Laboratories, N.Y.	11.5	1,400	N	Secondary	Sat.	Sat.	N	None	
Riverhead, N.Y.	1.3	1,500	N	Secondary	Sat.-	Sat.	N	None	
LONG ISLAND SOUND NORTH SHORE									
Harts Island Treatment Plant, N.Y.C.		5,100	N	Primary	Sat.	Sat.	N	None	
Orchard Beach Treatment Plant, N.Y.C.		60,000	N	Intermed.	Sat.	Sat.	N	None	
Columbia Island Trans. Bldg., N.Y.		50E	N	Primary	Sat.	Undet.	N	None	
Ft. Slocum, N.Y.		1,000E	N	Primary	Sat.	Sat.	N	None	
New Rochelle, N.Y.		57,000	N	Minor(a)	Unsat.	Sat.	N	Addition	Final Plans Approved

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					Cap'y.	Opr.			
LONG ISLAND SOUND NORTH SHORE (Cont.)									
New Rochelle Yacht Club, N.Y.		50E	N	Primary	Sat.	Sat.	N	None	
Larchmont, N.Y.		63,000	N	Primary	Unsat.	Undet.	N	Replacement	Final Plans Appr'd.
Mamaroneck Project, Westchester Co., N.Y.		40,000	N	Minor(a)	Unsat.	Undet.	N	Addition	Inactive
American Yacht Club, N.Y.		300	N	Primary	Sat.	Sat.	N	None	
Blind Brook Project, Rye, Westchester Co., N.Y.		9,500	N	Minor(a)	Unsat.	Undet.	N	Addition	Inactive
Port Chester, N.Y.		24,000	N	Primary	Unsat.	Sat.	N	Replacement	Final Plans Appr'd.

Zero Point - Ft. Hamilton - Ft. Wadsworth
N - Newark Bay (K-3.5)

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy				
					Cap'y.	Opr.			
HACKENSACK RIVER N-4.7									
Rockland Light & Power Co., West Nyack, N.Y.	34.0	Miscellaneous	San.Sewage	Secondary	Sat.	Sat.	N	None	
Federal Paper Board Co., Bogota, N.J.	15.5	Paper	Organic	Minor**	Unsat.	Sat.	N	New Plant	Active Planning
Gair, Bogota Corrugated Fibre Box Co.,Bogota.,N.J.	15.5	Paper	Organic	Minor**	Unsat.	Sat.	N	New Plant	Active Planning
Continental Paper Co., Ridgefield Pk.,N.J.	14.0	Paper	Organic	Minor**	Unsat.	Sat.	N	New Plant	Under Construction
Bendix Aviation Corp., Teterboro, N.J.	6.0	Fab. Metals	San.Sewage	Secondary	Sat.	Sat.	N	None	
Koppers Co., Meadows Plant, Kearny, N.J.	4.9	Petrol.& Coal	Organic	None	-	-	2,000-A	New Plant	Active Planning
Thomas A. Edison, Inc. Bellville Turnpike,N.J.	4.8	Chemical	In.&Org.	None	-	-	80-A	Neutralization	Inactive
Koppers Co. - Chem. Division, Kearny, N.J.	4.7	Petrol.& Coal	In.&Org.	None	-	-	3,000-A	New Plant	Active Planning
Koppers Co. - Seaboard Plant, Kearny, N.J.	4.5	Petrol.& Coal	Organic	Primary	Sat.	Sat.	8	None	

* Industries having separate outlets and discharging wastes directly to watercourse.
** Indicates screening and/or comminution.

N - Not Known A - Based on actual measurement of BOD E - Estimated

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy Cap'y.	Adequacy Opr.			
HACKENSACK RIVER (Cont.)									
Koppers Co. - Gas & Coke Div., Kearny, N.J.	4.3	Petrol. & Coal	Organic	None	-	-	3,600-A	New Plant	Active Planning
Penn. RR Yards, Kearny, N.J.	3.3	Miscellaneous	San.Sew.	Minor**	Unsat.	Unsat.	125E	Connection to municipal sewer system	Active Planning
Public Service Gas & Electric, Kearny, N.J.	2.5	Petrol. & Coal	Inorg.	Primary	Undet.	Undet.	N	Undeter.	
U.S. Naval Shipyard, Kearny, N.J.	1.5	Miscellaneous	San.Sew.	Primary	Sat.	Sat.	50E	None	
OVERPECK CREEK Ha-13.8									
Lowe Paper Co., Ridgefield, N.J.	1.1	Paper	Organic	Minor**	Unsat.	Unsat.	N	New Plant	Under Construction (a)
BELLMAN'S BROOK Ha-11.1									
Bellman's Brook Bleachery, Fairview, N.J.	1.3	Textile	Organic	None	-	-	N	New Plant	Under Construction (a)
Armour & Co., Fairview, N.J.	0.1	Chemical	Organic	None	-	-	N	Undeter.	
CROMAKILL CREEK Ha-10.5									
N.Y. Central RR Yards, N.Bergen, N.J.	0.9	Miscellaneous	San.Sew.	None	-	-	100E	Connection to municipal sewer system	Active Planning

(a) Connecting to Bergen County Trunk Sewer in 1951

Ha - Hackensack River (N-4.7)

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy Cap'y.	Adequacy Opr.			
KINGSLAND CREEK Ha-6.6									
Kingsland Shops, Lyndhurst, N.J.	1.9	Miscellaneous	In.&Org.	None	-	-	75E	Connecting to municipal sewer system	Active Planning
E.F. Drew & Co., Lyndhurst, N.J.	1.4	Chemical	Organic	None	-	-	N	Undet.	
SAWMILL CREEK Ha-5.7									
E.I. duPont de Nemours, Arlington, N.J.	1.8	Chemical	Organic	None	-	-	3700-A	New Plant	Active Planning
Joseph Davis Plastic Co., Arlington, N.J.	1.6	Chemical	Organic	None	-	-	N	Undet.	
DEAD HORSE CREEK Ha-5.0									
Martin Dennis Co. Belleville Turnpike, N.J.	0.2	Chemical	Inorg.	None	-	-	N	Undet.	
PENHORN CREEK Ha-4.2									
The Quaker Soap Co. Secaucus, N.J.	2.0	Food	Organic	Primary	Undet.	Undet.	N	Undet.	
Charles Haag, Inc. Secaucus, N.J.	2.0	Food	Organic	Minor**	Undet.	Undet.	N	Undet.	

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy Cap'y.	Opr.			
PENHORN CREEK (Cont)									
Charles Miller & Co., Secaucus, N.J.	1.5	Food	Organic	Primary	Unsat.	Unsat.	16,000-A	Additions	Undetermined
N.J. Tallow, Inc., Secaucus, N.J.	1.3	Food	San.Sew.	Primary	Undet.	Undet.	N	Undet.	
United Butchers Rendering Co., Secaucus, N.J.	1.3	Food	Organic	None	-	-	N	Undet.	
N.J. Soap Co., Secaucus, N.J.	1.3	Food	San.Sew.	Primary	Undet.	Undet.	N	Undet.	
Bart Packing Co., Secaucus, N.J.	1.3	Food	Organic	Primary	Undet.	Undet.	N	Undet.	
Industrial Site, Peterson's Lane, Secaucus, N.J.	0.7	Food	San.Sew.	Primary	Undet.	Undet.	N	Undet.	
PASSAIC RIVER N-4.7									
O'Dowds Dairy, Pine Brook, N.J.	41.5	Food	Organic	Intermed.	Sat.	Sat.	10-A	None	
Beattie Mfg. Co., Little Falls, N.J.	28.0	Textile	Organic	Intermed.	Sat.	Undet.	N	None	
Julius Schmid Co., West Paterson, N.J.		Rubber	Organic	None	-	-	260	Undet.	
Marcalus Mfg. Co., East Paterson, N.J.	18.0	Paper	Organic	Primary	Sat.	Sat.	N	None	
Sandoz Chemical Works, Fairlawn, N.J.	16.0	Chemical	Organic	Secondary	Sat.	Undet.	N	None	

P - Passaic River (N-4.7)
R - Rockaway River (P-42.5)

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures Degree	Adequacy Cap'y.	Adequacy Opr.	P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
PASSAIC RIVER (Cont.)									
Clifton Paper Co., Clifton, N.J.	15.0	Paper	Organic	Primary	Sat.	Undet.	N	None	
Standard Bleachery, East Rutherford, N.J.	13.8	Textile	Organic	Primary	Sat.	Sat.	N	None	
Woburn Chemical Co., Kearny, N.J.	2.0	Chemical	Organic	Primary	Sat.	Sat.	N	None	
American Fat & Tallow Co., Newark, N.J.	1.0	Food	Organic	Primary	Sat.	Sat.	N	None	
Bayonne Barrel & Drum Co., Newark, N.J.	1.0	Miscellaneous	Organic	Primary	Sat.	Sat.	N	None	
CANOE BROOK P-50.0									
Thompson & Sons Dairy, Livingston Twp., N.J.	2.0	Food	Organic	None	-	-	N	New Plant	Active Planning
ROCKAWAY RIVER P-42.5									
S.B. Penick & Co., Montville Twp., N.J.	5.0	Chemical	Organic	None	-	-	N	New Plant	Undeter.
WHIPPANY RIVER R-0.7									
Whippany Paper Bd. Co., Whippany, N.J.	4.8	Paper	Organic	Intermed.	Unsat.	Sat.	5000-E	Addition	Under Construction

W - Whippany River (R-0.7)
Po- Pompton River (P-31.8)
M - Mahwah River (Ra-12.4)

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy				
					Cap'y.	Opr.			
WHIPPANY RIVER (Cont.)									
Bell Telephone Labs. Whippany, N.J.	4.8	Miscellaneous	Organic	Secondary	Sat.	Sat.	N	None	
Flintkote Co., Hanover Twp., N.J.	3.6	Miscellaneous	San.Sew.	Secondary	Sat.	Sat.	20-A	None	
MALAPARDIS BROOK W-5.0									
Newark Milk & Cream Co., Parsippany, N.J.	1.0	Food	Organic	Intermed.	Sat.	Sat.	13	None	
POMPTON RIVER P-31.8									
Rare Earths Inc., Pompton Plains, N.J.	5.5	Chemical	Inorg.	Secondary	Undet.	Undet.	N	Undeter	
RAMAPO RIVER Po-6.5									
Monroe Laundry, Monroe, N.Y.	31.0	Miscellaneous	Organic	None	-	-	N	Undeter.	
Schwartz Yarn Co. & Ramapo Piece Dye Works, Sloatsburg, N.Y.	17.0	Textile	Organic	Intermed.	Undet.	Undet.	N	Addition	Inactive
MASONICUS BROOK M-0.4									
American Brake Shoe Co., Mahwah, N.J.	1.0	Primary Metal	Inorg.	Minor**	Undet.	Undet.	N	None	

W - Whippany River (R-0.7)

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy				
					Cap'y.	Opr.			
PEQUANNOCK RIVER W-1.3									
Pequannock Valley Paper Co., Kinnelon Twp., N.J.	3.5	Paper	Organic	Primary	Sat.	Sat.	252	None	
Pequanoc Rubber Co., Butler, N.J.	3.5	Rubber	Organic	Primary	Sat.	Sat.	300-A	Addition	Under Construction
American Hard Rubber Co., Butler, N.J.	3.5	Rubber	Organic	Primary	Sat.	Sat.	N	None	
Pompton Crushed Stone Co.,Riverdale, N.J.	2.0	Other Mining	Inorg.	None	-	-	N	Undeter.	
Consolidated Stone & Sand Co.,Riverdale, N.J.	2.0	Other Mining	Inorg.	Primary	Sat.	Sat.	N	None	
DEEPAVAAL BROOK P-31.1									
Curtiss-Wright Corp., Caldwell Twp., N.J.	1.2	Fab. Metal	San.Sew.	Secondary	Sat.	Sat.	342	None	
Curtiss-Wright Corp., Caldwell Twp., N.J.	1.2	Fab. Metal	In.&Org.	Primary	Sat.	Sat.	348	None	
PREAKNESS BROOK P-30.9									
Preakness Dairy, Inc., Preakness, N.J.	3.0	Food	Organic	None	-	-	48	New Plant	Active Planning

P - Passaic River (N-4.7)
S - Saddle River (P-15.0)

TABLE 2

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BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy Cap'y.	Adequacy Opr.			
PECKMAN CREEK P-26.6									
Modern Metal Industries, Verona, N.J.		Fab. Metal	Inorg.	None	-	-	N	Undet.	
Taylor's Dairy, Cedar Grove, N.J.		Food	Organic	Primary	Unsat.	Unsat.	60	Connection to municipal sewer system	Active Planning
Little Falls Laundry, Little Falls, N.J.	1.4	Miscellaneous	Organic	Intermed.	Sat.	Sat.	300-A	None	
SADDLE RIVER P-15.0									
Wright Aeronautical Corp., Wood Ridge, N.J.	1.1	Miscellaneous	Organic	Primary	Sat.	Sat.	N	None	
HOHOKUS BROOK S-7.5									
Hohokus Bleachery, Hohokus, N.J.	3.4	Textile	Organic	Primary	Sat.	Sat.	N	None	
WEASEL BROOK P-14.0									
Athenia Steel Co., Clifton, N.J.	3.6	Fab. Metal	Organic	Primary	Sat.	Sat.	N	None	
Federal Creosoting Co., Clifton, N.J.		Chemical	Organic	Primary	Sat.	Sat.	N	None	

P - Passaic River (N-4.7)

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BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy Cap'y.	Opr.			
THIRD RIVER P-11.0									
Hoffman-La Roche, Nutley, N.J.	3.0	Chemical	Organic	Primary	Sat.	Sat.	N	None	
RARITAN RIVER Rar. Bay									
Diehl Mfg. Co., Finderne, N.J.	22.9	Miscellaneous	San.Sew.	Secondary	Sat.	Sat.	300-A	None	
Johns-Manville, Manville, N.J.	22.2	Miscellaneous	Organic	Primary	Unsat.	Sat.	15,000-A	Additions	Active Planning
Johns-Manville Research Center, Manville, N.J.	21.9	Miscellaneous	Organic	Primary	Undet.	Undet.	20-A	Undeter.	
Calco, Bridgewater Twp., N.J.	19.8	Chemical	Organic	Primary	Unsat.	Sat.	213,200-A	New Plant	Active Planning
Sherwin-Williams, Bridgewater Twp.,N.J.	19.5	Chemical	Organic	Primary	Sat.	Sat.	N	None	
Ruberoid Co., So. Bound Brook, N.J.	18.2	Miscellaneous	Organic	Minor**	Undet.	Undet.	25-A	Undeter.	
Pathe Film Co., Middlesex Boro, N.J.	18.0	Chemical	Ino.&Org.	Intermed.	Sat.	Sat.	70-A	None	
Bakelite Corp., Piscataway Twp., N.J.	17.8	Chemical	Organic	Secondary	Unsat.	Undet.	44,000-A	Addition	Active Planning (b)

(b) May enter proposed Middlesex Valley Trunk Sewer.

Rar - Raritan River
No - North Branch Raritan (Rar-30.1)
L - Lamington River (No-6.5)
Ro - Rockaway Creek (L-2.5)

TABLE 2

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				Degree	Adequacy Cap'y.	Opr.			
RARITAN RIVER (Cont.)									
Raritan Arsenal, Raritan Twp., N.J.	5.5	Chemical	San.Sew.	Secondary	Undet.	Undet.	200	Undeter.	
National Lead Co., Sayreville Twp., N.J.	3.4	Chemical	Organic	None	-	-	7600-A	New Plant	Active Planning (b)
Heyden Chem. Co., Fords, N.J.	3.2	Chemical	Organic	Minor **	Unsat.	Undet.	28200-A	Addition	Active Planning (b)
Philip Carey Mfg. Co., Perth Amboy, N.J.	1.5	Miscellaneous	Organic	None	-	-	13200-A	New Plant	Active Planning
American Ag. Chem. Co., S. Amboy, N.J.	0.1	Chemical	Organic	Primary	Undet.	Undet.	70-A	Undet.	
ROCKAWAY CREEK L-2.5									
Durling Farms, Whitehouse Station, N.J.	3.0	Food	Organic	Intermed.	Sat.	Sat.	30-A	None	
SOUTH BRANCH ROCKAWAY CREEK Ro-3.1									
Schmalz Dairy Farms, Lebanon, N.J.	5.0	Food	Organic	Secondary	Sat.	Sat.	100-A	None	
State Dairies, Inc., Lebanon, N.J.	5.0	Food	Organic	Intermed.	Sat.	Sat.	100-A	None	

(b) May enter proposed Middlesex Valley Trunk Sewer.

Rar - Raritan River
Sb - South Branch Raritan River (Rar-30.1)
Mi - Millstone River (Rar-20.7)

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Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
					Adequacy				
				Degree	Cap'y.	Opr.			
SOUTH BRANCH RARITAN Rar-30.1									
Walsh Farms, Inc., Long Valley, N.J.	35.5	Food	Organic	Undet.	-	-	N	Undeter.	
B.R. Waldron & Sons, Califon, N.J.	31.5	Food	Organic	Undet.	-	-	E	Undeter.	
Johanna Farms, Inc., Raritan Twp., N.J.		Food	Organic	Intermed.	Sat.	Sat.	150-A	None	
BEAVER BROOK Sb-22.0									
Annandale Dairies, Annandale, N.J.	1.7	Food	Organic	Intermed.	Sat.	Sat.	60-E	None	
MILLSTONE RIVER Rar-20.7									
R.C.A.Labs, West Windsor Twp.,N.J.	15.5	Miscellaneous	San.Sew.	Secondary	Sat.	Sat.	20-A	None	
Heyden Chem. Co., W. Windsor Twp.,N.J.	15.5	Chemical	San.Sew.	Secondary	Sat.	Sat.	260-A	None	
DEVILS BROOK Mi-16.6									
Magnetic Pigment Co. Monmouth Junction, N.J.	7.5	Chemical	Inorg.	Primary	Sat.	Unsat.	1-A	None	Improve Operation
Walker Gordon Lab., Plainsboro, N.J.	0.5	Food	Organic	Intermed.	Sat.	Sat.	800-A	None	

Mi - Millstone River (Rar.-20.7)
G - Green Brook (Rar.-18.2)
Rar - Raritan River

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July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures: Degree	Adequacy: Cap'y.	Adequacy: Opr.	P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
PIKE BROOK Mi-0.4									
Consumers Farm Milk Coop., Belle Mead, N.J.	4.5	Food	Organic	Intermed.	Sat.	Sat.	700-A	Addition	Under Construction
BOUND BROOK G-2.5									
Woodbrook Farms Dairy Raritan Twp., N.J.	7.5	Food	Organic	None	-	-	N	Undeter.	
Dreyfus Corp., S. Plainfield, N.J.	6.0	Food	Organic	Primary	Sat.	Sat.	60-A	None	
Cornell-Dubilier Corp., S.Plainfield, N.J.	5.8	Fab. Metals	Organic	Secondary	Sat.	Sat.	13-B	None	
MILE RUN Rar-14.3									
Mack Mfg. Co. New Brunswick, N.J.	2.0	Miscellaneous	Organic	Primary	Sat.	Sat.	N	None	
MILL BROOK Rar-10.1									
Ford Motor Co., Metuchen, N.J.	3.5	Miscellaneous	Undet.	Primary	Sat.	Sat.	130-B	None	
Benzol Prods. Co. Raritan Twp., N.J.	1.0	Chemical	Organic	Primary	Undet.	Undet.	3800-A	Undeter.	(b)

(b) May enter proposed Middlesex Valley Trunk Sewer

Rar - Raritan River

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy Cap'y.	Adequacy Opr.			
SOUTH RIVER Rar-6.8									
P.J. Schweitzer, E. Spotswood, N.J.	6.5	Paper	Organic	Minor **	Unsat.	Unsat.	74,300-A	Addition	Active Planning (b)
Anheuser-Busch, Old Bridge, N.J.	6.0	Food	Organic	None	-	-	63,300-A	New Plant	Active Planning (b)
TRIBUTARY TO SOUTH RIVER So-2.0									
E.I. duPont de Nemours & Co., Parlin, N.J.	1.2	Chemical	Organic	Primary	Sat.	Sat.	3,400-A	None	
DuPont Photo Prods., Parlin, N.J.	1.2	Chemical	Organic	None	-	-	16,800-A	New Plant	Active Planning
Hercules Powder Co., Parlin, N.J.	1.0	Chemical	Organic	Primary	Unsat.	Sat.	19,100-A	Additions	Active Planning(b)
LONG ISLAND-SOUTH SHORE GREAT SOUTH BAY									
Blue Point Laundry, Blue Point, N.Y.		Miscellaneous	Organic	Primary	Undet.	Undet.	N	Additions	Inactive
PATCHOGUE CREEK TO GREAT SOUTH BAY									
Patchogue Plymouth Mills, Patchogue, N.Y.		Textile	Organic	None	-	-	N	Connect to municipal sewer system	Inactive

(b) May enter proposed Middlesex Valley Trunk Sewer

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures	Adequacy		P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Cap'y.	Opr.			
OLD NECK CREEK									
Hallock Brookside Farm, Center Moriches, N.Y.	0.75	Food	Organic	None	-	-	N	Undet.	
Swift Stream Farms, Inc., Moriches, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	
W. J. Lukert Sons, Moriches, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	
Forge River Duck Farm, Center Moriches, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	
FORGE RIVER									
Paul Chernoma Moriches, N.Y.	1.0	Food	Organic	None	-	-	N	Undet.	
Twin Brook Duck Farm, Moriches, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	
Ben Jurgielewicz, Moriches, N.Y.	0.25	Food	Organic	None	-	-	N	Undet.	
P 851-2**									
John Borak, Moriches, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	
P 851-1**									
John H. Glover, East Moriches, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	

** Unnamed stream, N.Y. State Code Number

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
					Adequacy				
				Degree	Cap'y.	Opr.			
WEST SENIX CREEK									
Clifford B. Bowditch, Center Moriches, N.Y.	1.0	Food	Organic	None	-	-	N	Undet.	
Victor Jareswaicz, Center Moriches, N.Y.	0.75	Food	Organic	None	-	-	N	Undet.	
TERRIL RIVER									
W. R.Smith, East Moriches, N.Y.	1.0	Food	Organic	None	-	-	N	Undet.	
Stanley Chornoma East Moriches, N.Y.	.87	Food	Organic	None	-	-	N	Undet.	
R. L. Smith, East Moriches, N.Y.	.87	Food	Organic	None	-	-	N	Undet.	
Chi Dux Farm - John Leary, East Moriches, N.Y.	.75	Food	Organic	None	-	-	N	Undet.	
Pine Grove Duck Farm, East Moriches, N.Y.	.62	Food	Organic	None	-	-	N	Undet.	
Joseph Pedlaski, East Moriches, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	
Charles Vigliotta & Sons, E. Moriches, N.Y.	.37	Food	Organic	None	-	-	N	Undet.	
Harry Smith, East Moriches, N.Y.	.12	Food	Organic	None	-	-	N	Undet.	

1/ Unnamed branch of Terril River -
N.Y. State Code Number
2/ Unnamed branch of Tuthill Cove
N.Y. State Code Number
3/ Unnamed branch of Harts Cove
N.Y. State Code Number

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures: Degree	Adequacy: Cap'y.	Adequacy: Opr.	P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
170 - 2 1/									
Bernstein Bros., Center Moriches, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	
169 - a 2/									
Adam Soroka, East Moriches, N.Y.	.25	Food	Organic	None	-	-	N	Undet.	
Adam Kanas, East Moriches, N.Y.	.25	Food	Organic	None	-	-	N	Undet.	
169 3/									
Stanley Ogeka, East Moriches, N.Y.	.25	Food	Organic	None	-	-	N	Undet.	
SEATUCK CREEK									
Chester W. Massey Eastport, N.Y.	.75	Food	Organic	None	-	-	N	Undet.	
Big Seatuck Duck Farm, Eastport, N.Y.	.67	Food	Organic	None	-	-	N	Undet.	
Anthony Ancsurowski, Eastport, N.Y.	.50	Food	Organic	None	-	-	N	Undet.	
Tuttle Bros. Duck Farm, Eastport, N.Y.	.37	Food	Organic	None	-	-	N	Undet.	

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures: Degree	Adequacy: Cap'y.	Adequacy: Opr.	P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
SEATUCK CREEK (Cont.)									
East River Duck Farm, Eastport, N.Y.	.25	Food	Organic	None	-	-	N	Undet.	
Peter Kostuck & Son, Eastport, N.Y.	0.0	Food	Organic	None	-	-	N	Undet.	
167 - 1[4/]									
Acme Duck Farms, Eastport, N.Y.	1.0	Food	Organic	None	-	-	N	Undet.	
Horace E. Mott, Eastport, N.Y.	.75	Food	Organic	None	-	-	N	Undet.	
I. M. Gajowski, Eastport, N.Y.	.5	Food	Organic	None	-	-	N	Undet.	
Zygmunt Boninski, Eastport, N.Y.	.25	Food	Organic	None	-	-	N	Undet.	
167 - 1b**									
L.I. Duck Packing Corp. Eastport, N.Y.	.75	Food	Organic	None	-	-	N	Undet.	
EAST BRANCH									
Daniel Murphy, Eastport, N.Y.	.67	Food	Organic	None	-	-	N	Undet.	
Sunnyside Duck Farm, Eastport, N.Y.	.67	Food	Organic	None	-	-	N	Undet.	

**Unnamed Stream - N.Y. State Code Number

[4/] Unnamed branch of Seatuck Creek - N.Y. State Code No.

**Unnamed Stream - New York
State Code Number

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures Degree	Adequacy Cap'y.	Adequacy Opr.	P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
EAST BRANCH (Cont.)									
Spring Water Duck Farm, Speonk, N.Y.	.37	Food	Organic	None	-	-	N	Undet.	
Wheatena Duck Farm, Speonk, N.Y.	.25	Food	Organic	None	-	-	N	Undet.	
Harry S.Baker, Eastport, N.Y.	.25	Food	Organic	None	-	-	N	Undet.	
Michael Stachnik, Speonk, N.Y.	.12	Food	Organic	None	-	-	N	Undet.	
Peter Kostuk and Sons, Eastport, N.Y.	0.0	Food	Organic	None	-	-	N	Undet.	
SPEONK RIVER									
Prokop Pacholk, Speonk, N.Y.	1.0	Food	Organic	None	-	-	N	Undet.	
Stephen Kucsma, Speonk, N.Y.	.75	Food	Organic	None	-	-	N	Undet.	
Stephen Kuczma, Speonk, N.Y.	.75	Food	Organic	None	-	-	N	Undet.	
Leroy Wilcox, Speonk, N.Y.	.5	Food	Organic	None	-	-	N	Undet.	
162 - 0**									
C and R Duck Farm (Culver),Westhampton, N.Y.	.75	Food	Organic	None	-	-	N	Undet.	

**Unnamed Stream - New York
State Code Number
P - Peconic River

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures			P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
				Degree	Adequacy Cap'y.	Opr.			
162 - o** (cont)									
Leroy Wilcox, Speonk, N.Y.	.5	Food	Organic	None	-	-	N	Undet.	
162 - a**									
C and R Duck Farm, Westhampton, N.Y.	.37	Food	Organic	None	-	-	N	Undet.	
PECONIC RIVER									
John J. Jackowski, Calverton, N.Y.	5.7	Food	Organic	None	-	-	N	Undet.	
John S. Krouse Calverton, N.Y.	5.0	Food	Organic	None	-	-	N	Undet.	
Clear View Poultry Farm Calverton, N.Y.	3.7	Food	Organic	None	-	-	N	Undet.	
George Schmelser Calverton, N.Y.	3.5	Food	Organic	None	-	-	N	Undet.	
Olin F. Warner Calverton, N.Y.	3.2	Food	Organic	None	-	-	N	Undet.	
Walter Semaschuk Riverhead, N.Y.	2.5	Food	Organic	None	-	-	N	Undet.	
Esso Conservative Gas Corp., Riverhead, N.Y.	1.0	Petro. & Coke	Organic	None	-	-	N	Undet.	

P - Peconic River

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures Degree	Adequacy Cap'y.	Adequacy Opr.	P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
PECONIC RIVER (Cont.)									
H.M. Ramsaver Co., Riverhead, N.Y.	0.5	Fab. Metals	San.Sew.	Primary	Undet.	Undet.	N	Undet.	
Dodge-Plymouth Garage Riverhead, N.Y.	0.1	Miscellaneous	San.Sew.	None	-	-	N	Undet.	
Suffolk Tire Shop Riverhead, N.Y.	0.1	Miscellaneous	San.Sew.	None	-	-	N	Undet.	
TRIBUTARY 3 P-3.3									
Carmine Bruno Riverhead, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	
TRIPUTARY 1 P-0.5									
Harold T. Hubbard Riverhead, N.Y.	0.7	Food	Organic	None	-	-	N	Undet.	
SAWMILL CREEK									
Michael Schubert Riverhead, N.Y.	3.0	Food	Organic	None	-	-	N	Undet.	
Walter B. Smith & Sons Riverhead, N.Y.	1.0	Food	Organic	None	-	-	N	Undet.	
Hollis V. Warner Riverhead, N.Y.	0.8	Food	Organic	None	-	-	N	Undet.	
William G. Hubbard Riverhead, N.Y.	0.6	Food	Organi	None	-	-	N	Undet.	

TABLE 2

NEW YORK - NEW JERSEY METROPOLITAN AREA

BASIC DATA ON SOURCES OF INDUSTRIAL* POLLUTION

July 1951

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Treatment or Other Pollution Control Measures Degree	Adequacy Cap'y.	Adequacy Opr.	P.E. (B.O.D.) Discharged to Watercourse	Pollution Abatement Needs	Current Status Industrial Action
SAWMILL CREEK (CONT.)									
Alex Ogeka Riverhead, N.Y.	0.5	Food	Organic	None	-	-	N	Undet.	
A.B. Soyars & Sons Riverhead, N.Y.	0.1	Food	Organic	None	-	-	N	Undet.	
MEETING HOUSE CREEK									
H. F. Corwin & Son Aquebogue, N.Y.	1.0	Food	Organic	Undet.	-	-	N	Undet.	
Charles J. Voss Aquebogue, N.Y.	1.0	Food	Organic	None	-	-	N	Undet.	
J.P. Celic's Broad Cove Duck Farm, Aquebogue, N.Y.	0.1	Food	Organic	None	-	-	N	Undet.	
TERRYS CREEK									
J. Wesley Warner Riverhead, N.Y.	1.5	Food	Organic	None	-	-	N	Undet.	
Trout Brook Duck Farm Riverhead, N.Y.	0.7	Food	Organic	None	-	-	N	Undet.	
Mrs. Anna Drop Riverhead, N.Y.	0.3	Food	Organic	None	-	-	N	Undet.	
REEVES BAY									
Griffin & Havens, Flanders, N.Y.		Food	Organic	None	-	-	N	Undet.	

APPENDIX A

NEW YORK - NEW JERSEY METROPOLITAN AREA

POPULATION - 1950 CENSUS*

County	County Area Square Miles	Population	Population Per Sq. Mile	% Change 1940-1950
NEW JERSEY				
Middlesex	312	264,659	848	+21.9
Somerset	307	98,740	322	+32.7
Hunterdon**	435	42,689	98	+16.1
Morris**	468	164,613	352	+30.9
Essex	128	900,887	7,038	+ 7.6
Passaic	194	337,308	1,739	+ 9.0
Bergen	233	536,310	2,302	+30.9
Union	103	397,559	3,860	+21.1
Hudson	45	646,136	14,359	- 0.9
NEW YORK				
Rockland**	178	89,009	500	+ 0.9
Putnam**	235	19,301	82	+16.6
Westchester**	435	622,983	1,432	+ 8.6
New York	22	1,936,540	88,025	+ 9.5
Richmond	57	191,015	3,351	+ 9.5
Kings	71	2,716,347	38,258	+ 0.7
Queens	108	1,546,294	14,318	+19.2
Bronx	41	1,444,903	35,242	+ 3.6
Nassau	300	666,252	2,221	+63.0
Suffolk	922	272,359	295	+38.0
TOTAL	4,594	12,893,904		

* Based on preliminary figures.
** Counties not completely in but having more than 50% of area in basin. Counties with less than 50% of area in basin not tabulated.

APPENDIX B

NEW YORK - NEW JERSEY METROPOLITAN AREA

MUNICIPAL WATER SUPPLIES(a)

	Number of Sources			Type of Treatment			Flow - MGD	
County	Stream	Well	Spring	Filtration	Chlorination	None	Surface	Ground
NEW JERSEY								
Middlesex	2	10	0	3	5	4	12.340	8,095
Somerset	5	6	0	3	7	1	3.634	0.367
Hunterdon(b)	3	1	3	0	4	0	0.410	1.450
Morris	7	25	8	3	18	17	4.989	7.735
Essex	3	4	0	2	4	0	125.900	10.700
Passaic	3	10	1	2	4	8	29.295	1.309
Bergen	1	15	0	1	8	7	31.600	5.678
Union	3	8	0	3	6	1	14.150	17.450
Hudson	2	0	0	0	2	0	51.500	—
Monmouth(b)	0	5	0	5	0	0	—	1.120
Mercer(b)	0	8	1	1	5	2	—	1.491
NEW YORK								
Orange(b)	7	2	0	0	6	3	3.085	0.140
Putnam(b)	18	9	4	2	14	9	0.544	0.064
Rockland(b)	5	13	3	2	3	12	2.805	3.281
Dutchess	1	0	1	0	1	0	0.130	—
Westchester	16	18	2	11	13	9	32.555	2.453
New York City(c)	1	2	0	1	1	1	333.000	7.500
Nassau	0	31	0	4	4	23	—	46.295
Suffolk	1	47	0	1	3	44	0.100	9.953
TOTALS	78	214	23	44	108	151	646.037	125.080

(a) Data from U.S.P.H.S. Census of Water and Sewage Facilities, 1949

(b) Counties only partially in basin, listings are for that portion of county in basin.

(c) Five New York Counties comprise New York City. Approximately 1/3 of New York's surface supply developed inside basin. The total supply for New York City is about 1,313.037 MGD.

APPENDIX C

NEW YORK - NEW JERSEY METROPOLITAN AREA

Direct Discharges by Industry into the Interstate Sanitation District(1)

INDUSTRIAL DISTRIBUTION

	Number of Plants	Volume of Discharges		Treatment at Source	
		Waste	Clean	Number	Volume
		MGD			MGD
Food	52	15.32	54.21	17	11.51
Textile	15	3.70	0.20	2	0.20
Paper	6	2.04	0.01	0	0
Chemicals	60	51.55	79.49	28	43.80
Petroleum	14	333.03	8.74	12	333.02
Rubber	1	0.01	0.11	1	0.01
Stone, Clay, Glass	11	5.40	0.04	6	3.46
Primary metals	11	8.36	72.48	5	6.39
Fabricated metals	15	0.25	0.03	7	0.02
Utilities	19	73.66	663.23	13	15.96
Miscellaneous	34	1.45	2.41	13	0.65
TOTALS	238	494.77	880.95	104	415.02

(1) Waste contributing plants in New York - New Jersey areas only.

APPENDIX D

NEW YORK - NEW JERSEY METROPOLITAN AREA

Direct Discharges by Industry into the Interstate Sanitation District(1)

GEOGRAPHICAL DISTRIBUTION

	Number of Plants	Volume of Discharges		Treatment at Source	
		Waste	Clean	Number	Volume
		MGD			MGD
Bronx Co.	4	0.70	22.00	3	0.69
Kings Co.	55	39.88	54.41	13	33.23
Nassau Co.	6	0.07	0	4	0.04
New York Co.	0				
Queens Co.	27	18.12	126.81	14	17.31
Richmond Co.	19	9.14	320.74	5	6.39
Rockland Co.	15	8.86	36.55	3	3.54
Suffolk Co.	12	57.72	0.30	8	0.51
Westchester Co.	17	4.19	46.75	7	2.74
New York State Totals -	155	138.68	607.56	57	64.45
Bergen Co.	7	9.56	26.38	5	7.81
Essex Co.	2	5.48	1.41	2	5.48
Hudson Co.	38	104.50	9.72	15	103.95
Middlesex Co.	18	13.72	174.81	10	12.92
Monmouth Co.	5	14.66	2.34	4	14.66
Union Co.	13	208.19	58.73	11	205.75
New Jersey Totals	83	356.11	273.39	47	350.57

(1) Waste contributing plants in New York - New Jersey areas only.

APPENDIX E

NEW YORK - NEW JERSEY METROPOLITAN AREA

EXISTING AND FUTURE SEWAGE TREATMENT WORKS OF THE NEW YORK CITY MASTER PLAN FOR SEWAGE TREATMENT

Name	Date Operation Started	Served or Sewered Population-1950	Design Capacity MGD	Type of Treatment	Status of Treatment
Wards Island	1937	1,406,000	220	Activated Sludge	In Operation
Wards Island Ext.	-	773,000	240	Activated Sludge	Under Design
Canal Street	1922	38,000	15	Fine Screens	In Operation. Flow to Newtown Creek when completed.
Dyckman Street	1918	39,000	7.5	Fine Screens	In Operation. Flow to Wards Is.Ext. when completed.
Hunts Point	-	675,000	120	Activated Sludge	Under Construction. Expected completion spring 1952
Hunts Point Ext.	-		30	Activated Sludge	Future
City Island-Harts Is.	1942	5,100	1.5	Sedimentation and Chlorination	In Operation
City Island-Harts Is. Ext.	-	-	1.5	Sedimentation and Chlorination	Future
Newtown Creek	-	1,359,000	140	High Rate. Activated sludge	Under Design
Newtown Creek Ext.	-	-	140	High Rate. Activated sludge	Future
26th Ward	1950	400,000	60	Activated Sludge	In Operation
Coney Island	1935	-	35	Chemical Precipitation & Chlorination	In Operation

Name	Date Operation Started	Served or Sewered Population-1950	Design Capacity MGD	Type of Treatment	Status of Treatment
Coney Island Ext.	1942	463,000	35	Chemical Precipitation & Chlorination	In Operation
Coney Island Ext.	-	-	35	Chemical Precipitation & Chlorination	Future
Red Hook	-	270,000	40	Sedimentation	Future
Owls Head	-	965,000	160	High Rate Activated Sludge	Under Construction. Expected completion July 1952
Tallmans Island	1939	210,000	40	Activated Sludge	In Operation
Tallmans Island Ext.	-	-	10	Activated Sludge	Future
Jamaica	1943	460,000	65	Activated Sludge	In Operation
Jamaica Ext.	-	-	35	Activated Sludge	Future
Bowery Bay	1939	360,000	40	Activated Sludge	In Operation
Bowery Bay Ext.	-	300,000	80	Activated Sludge	Under Design
Rockaway	-	44,000	15	High Rate Activated Sludge	Under Construction Expected Completion June 1952
Rockaway Ext.	-	-	15	High Rate Activated Sludge	Future
Neponsit	1912	900	1	Septic Tank	In Operation. To Rockaway when completed.
Hammels	1927	23,000	15	Fine Screens & Chlorination	In Operation. To Rockaway when completed.
Port Richmond	-	130,000	10	Sedimentation	Under Construction. Expected completion end 1952

Name	Date Operation Started	Served or Sewered Population-1950	Design Capacity MGD	Type of Treatment	Status of Treatment
Port Richmond Ext.	-	-	20	Sedimentation	Future
Bloomfield	-	3,500	-	-	Future
Oakwood Beach	-	-	15	High Rate Activated Sludge	Under Design
Fresh Kills	-	11,500	5	-	Future
Tottenville	-	8,700	3	-	Future
Oakwood Beach	1927	37,000	5.5	Fine Screens & Chlorination	In Operation. To New Oakwood Beach plant when completed.
Cromwell Ave.	1924	-	4	Fine Screens & Chlorination	In Operation. To New Oakwood Beach Plant when completed.
		7,981,000	1659		

GPO 85-17886